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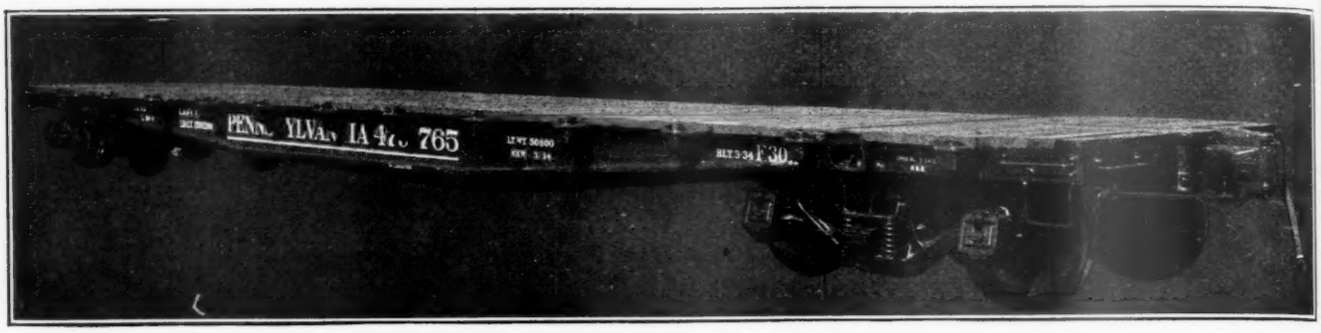
A Great Forward Step

PENNSYLVANIA RAILROAD

of greatly improved design with



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MUCH STRONGER CONSTRUCTION

LOWER FLOOR HEIGHT FROM RAIL

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GENERAL STEEL CAST

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RAILWAY AGE

Railway Labor Relations Need Realistic Examination

If there is a place on the railroad where, figuratively speaking, the diamond-stack wood-burner is still predominant it is in the dealings between management and labor. The machinery of negotiation, in spite of legislation supposed to modernize it, and the attitude of the negotiators are still governed by the assumption that employees and managements belong in hostile camps, when the mighty growth of a common enemy, outside competition, should have made clear that each side has much more to lose by the assaults of the common enemy than either can gain from or lose to the other.

Highly competent specialists in the strategy of negotiating differences between them have been developed by both management and labor. Neither has developed a strategy for reducing or settling their major points of difference or for bringing about co-operation about matters of common interest so that they may, while negotiating regarding their opposing interests, work together to defend themselves from outside attacks. One can only wish that the old story of the husband and wife who stopped their own fight and joined in chastizing an intruding third party might be taken as an example by the railroads and the unions.

Raising Wage Rates, but Not Wage Payments

Organized labor continues its anachronistic tactics of seizing strategic occasions to exact more money from the railroads—quite oblivious to the fact that such exactions can no longer, because of the existence of competing agencies of transportation, be easily passed along to railway patrons, but must be largely compensated for by reduced employment. More expensive wages and working conditions now result principally in dividing a given sum of money between fewer employees.

The leaders of the labor unions have been celebrating their recent success in negotiating for a restoration of the 10 per cent deduction from basic wage rates and in securing retirement pension legislation from Congress. In the first two weeks after the first installment of the wage restoration went into effect railroad car loadings were 5½ per cent less than in 1933. The railways are preparing to seek a general advance in rates to offset the increase in operating expenses which is occurring due to advances in prices of materials and supplies, advances in wages and prospective cost of the pension legislation. Every student of the subject knows, however, that, with the competition to which they are subject, they cannot get enough revenue by an advance in rates to pay the actual and prospective increase in their operating expenses without a large increase in traffic due to a substantial improvement in general business. Not knowing whether or when traffic will increase or rates be advanced, most railways are now reducing employment. Thus, the first result of the wage settlement and pension legislation is to throw out of work men that pay the labor unions to protect their jobs. The employees retained receive more pay, but at the cost of those who are deprived of all pay.

Primary Injustice of the Pension Bill

Railway managements as well as labor leaders have been slow to show a realization of the revolution which has occurred in the industry due to the growth of competitors who do not make concessions to their employees equal to and simultaneous with those made by the railways. There are two or three notable exceptions to this general observation, but, by and large, the managements in their dealings with labor have continued the same rear guard defensive tactics employed before competition existed—a strategy based upon continual retreat, the goal of which was always to minimize the ground lost, while admitting in advance that ground would be lost. It would be presumptuous for anyone sitting upon the sidelines to pontificate about the exact character which relations between the railway labor organizations and the managements should assume. It is not presumptuous, however, to call attention to the weaknesses inherent in the present situation, because they are apparent to anyone who will take the trouble to observe them.

In opposing the pension bill the railroads made little attempt to draw attention to its primary injustice, which

is that it applies to the railways alone and not to other forms of transportation or other industries. If the American people who pay freight rates wished to have their transportation costs increased to pay liberal pensions to transportation employees that would have been one matter. But to require the railways to pay such pensions, and make no such requirement of railway competitors is unjust from every point of view—

1. To shippers, because it unduly burdens the costs of the railway service, making it less attractive from a price standpoint than other forms of transport of intrinsically inferior economy.

2. To railway employees, because it weakens the railways in competition with other forms of transport, and thus reduces railway employment.

3. To motor transport and water line workers, because it extends benefits to railway employees while denying similar benefits to employees of other forms of transportation.

4. To railway investors, because it involves the use of the power of the state artificially and without justification to reduce the profitable utilization of the facilities which their savings have provided.

5. To taxpayers, because it tends to shift traffic from a form of transportation which yields taxes to those which require the expenditure of taxes to keep them in operation.

Wasteful Working Rules in Train Service

Again, the working rules in train and engine service should be vigorously challenged by the managements and faced realistically by the unions. These rules, which require, among other absurdities, an excessive number of employees on small train units (rail motor cars, for instance) have forced the railways to abandon much traffic to highway competitors and discontinue schedules which might otherwise have been kept in operation, providing employment to railway men. Both sides should also recognize the injustice and folly of attempting to adhere to the present basis of paying a day's wages for 100 miles run when trains are being speeded up to cover that distance in one hour. Train and enginemen are not sluggards. Most of them got their training in a day when wages were earned more often by the hour than by the mile. Surely they can realize that if the railways are forced to continue to pay a day's wages for 100 miles, they cannot compete with agencies of transportation whose employees cover 200 or 300 miles for a day's pay.

Co-ordinator Eastman's organization is engaged in an exhaustive and much-needed study of the conditions of railway employment and has now included these train service working rules in the scope of its investigation. But the mere ascertainment of the facts by the Co-ordinator will not necessarily imply corrective action, as witness the disregard by Congress of his recommendations on the pension bill. Regardless of how unfavorable and unjustifiable these rules may be found to be, they may remain in force unless managements courageously demand their correction and unless the unions consider such demands realistically in the light of the true interest of their members.

Anticipating Demands of Labor

There is an observation which one hears over and over again in talking to organized railway employees to the effect that "everything we have got we have had to fight for." That observation comes near to being true. The tactics of the unions have been continual encroachment upon railway revenues, with few concessions from management except after prolonged negotiations. Concessions so obtained always reflect to the glory of the aggressors, rather than augment the reputation for generosity of the side making the concessions. One wonders whether it might not be the part of wisdom for management to attempt to gage the sum total of probable concessions of this kind over a term of years and to offer them in advance of pressing demands, in return for concessions from the other side in relating some of the more arbitrary working rules.

The railways have not yet heard the end of demands from organized labor. If somehow its objectives might be considered by the managements in advance of their active promulgation, and an effort made to secure concessions elsewhere to make it possible to meet them in part, the managements might gain in reputation for a generosity which they have but with which they are seldom credited. Moreover, such anticipation might secure relaxation in burdensome rules which probably will not be changed otherwise and which operate to the disadvantage of the railroads and their employees alike.

Co-ordinator Eastman's study of labor conditions on the railroads ought not to stop at the frontiers which have so far been publicly outlined for it. It ought to go further and examine into the burden of organization expenses upon the employees and the efficiency with which the various unions function. It is well known that members of some of the organizations have had their insurance rates raised so precipitately that they have been forced to drop policies upon which they paid premiums for many years. The suspicion also exists that there are too many unions on the railroads, and that the employees' interests could be as well safeguarded by consolidation of some of them, thereby reducing overhead expenses and union dues. Delegates who have attended conventions of some of the organizations report that such affairs are highly expensive and wasteful. Information on these subjects would be of interest and value to railroad employees, since any saving which could be brought about in union expenses, if no loss in protection were involved, would be a net gain to the members equivalent to an increase in wages.

Cheap Labor Drives Out Dear Labor

Probably the matter of unemployment reserves or unemployment insurance will demand attention before long. If that supposition is correct, the proper time to begin discussing it is now—to see whether changes

in working rules or other arrangements might not be made to cover the cost which it would entail. In any event, the railroads ought to make one point resonantly clear, and that is that they will fight to the last ditch henceforth any concession to employees which is not made also to employees of competing forms of transport. And in such determination they should be joined by every railroad employee. No industry paying good wages to its employees can continue to increase wages and still meet the competition of sweat shops. The railways cannot indefinitely increase labor standards while truck and water lines with overworked, underpaid, pensionless employees stand ready to take railway traffic at the slightest suggestion of increased railway rates.

A few more burdens like the pension bill placed on the railways and not upon their competitors, and there will not be many railway employees left to enjoy high wages, short hours and pensions. Just as cheap money drives out the dear, so does cheap labor take jobs away from that which is high in price.

Carrying On Through the Depression

When the full record of the depression from which we are now emerging has been written, one of the roads which will stand out as having contributed to lessening its effect, and, at the same time, as having capitalized on its few advantageous aspects, is the Pennsylvania. This road, with courage and faith in the future, has continued the extensive program of improvements to which it was committed at the time of the collapse in 1929. It has constantly improved its plant, and has been able thus to carry on with certain appreciable advantages to itself, obtainable to the highest degree only in times of slackened business activity. The latest of its outstanding improvements to be put in service are those at Philadelphia, Pa., which include a new and modern passenger station. These improvements are described in this issue. In February, 1931, following an expenditure of $106,000,000 for new construction in 1930, the original plans for which called for an outlay of only about $90,000,000, the Pennsylvania announced that its program of improvements planned for 1931 to 1934, involving an estimated expenditure of $175,000,000, would be speeded up. Limited only by the most severe exigencies of the depressed economic conditions which have prevailed, it has prosecuted its work in accordance with this schedule.

Some of the large projects which have been advanced or completed since 1929 include two large lift bridges over the Hackensack river and a large rail-to-keel terminal, both at Jersey City, N. J.; a new enginehouse and related facilities at Philadelphia; the separation of highway and railway grades at numerous points; the electrification of train operation between New York and Washington, D. C., the last section of which, between Wilmington, Del., and Washington, is now actively under way; the construction of a new passenger station at Newark, N. J., with many related improvements, including three large vertical lift bridges over the Passaic river; the construction of two additional tracks through Baltimore, involving the building of approximately 11,500 ft. of tunnel; and the extensive passenger terminal improvements at Philadelphia.

Of these projects, one of the most comprehensive has been that within the City of Philadelphia. This project has included, in addition to a large modern station of Grecian architecture on the west bank of the Schuylkill river, a large suburban station in the heart of the city beneath a 22-story office building, a large suburban unit in conjunction with the new through station, a new central terminal heating and auxiliary power plant, the electrification of all suburban train operation in the Philadelphia area, the rearrangement and construction of many miles of tracks, and the complete revision of the signaling and interlocking facilities within the terminal area.

The passenger station, which was put in partial service on December 15, 1933, and which is still incomplete at the track level awaiting related improvements on the part of the city, is an unusual combination of architectural beauty and of practicability from the standpoint of both the public and the railroad. In its location and track facilities the railroad has ingeniously and adequately solved the long-standing difficult and costly problem of operating its heavy through traffic into an "off-the-route" stub-end station.

Through the work which has been carried on and is still under way thousands of skilled and unskilled workmen have been given employment, not alone on the individual projects themselves, but also in numerous other branches of industry, such as the steel, cement, lumber, stone-quarrying and electrical industries. Furthermore, the work done by the Pennsylvania has, in many cases, stimulated many thousands of man-hours of employment on the part of cities and municipalities on related projects, all at a time when business in general has been sorely in need of such stimulus. At the same time, with lower material and construction costs prevailing, it has, in many instances, been able to make construction contracts on a very favorable basis, and, by speeding construction, has reduced materially the interest charges during construction and has the more quickly obtained the advantages and economies possible from new facilities. Material deliveries have been unusually favorable in most cases, and, of no small importance, owing to reduced rail traffic, the construction work has been interfered with to a minimum, and, in turn, has itself caused a minimum of interference with traffic.

The Pennsylvania has fought the depression in a way that has been of public benefit while business has been bad and which will be of benefit both to the public and the Pennsylvania when business becomes normal.

Both the East and West Facades Are Impressive Be... Massiv...

Philadelphia Improvements of the Pennsylvania Near Completion

By Neal D. Howard
Eastern Engineering Editor, Railway Age

Spacious monumental passenger station, about one mile west of old Broad Street station, is key to large project under way since 1927—Other features include a new suburban terminal beneath a 22-story office building in the center of the city, a modern central heating and auxiliary power plant, and the complete rearrangement of the terminal trackage and signal and interlocking facilities

THE Pennsylvania's new gateway into the City of Philadelphia, Pa.—a spacious, monumental passenger station on the west bank of the Schuylkill river—has been put in service. Although only a part of a larger project, it is the most noteworthy unit of an ambitious program of passenger terminal improvements which the railroad undertook at Philadelphia in 1927 and which is now practically completed.

The new station, which serves both through and suburban trains, is located approximately one mile west of City Hall Square, with which it will be joined eventually by a wide boulevard. It is of Grecian architecture in limestone, with a maximum height of 116 ft., and covers an area of 639 ft. long by 327 ft. wide. When all of its related facilities are completed, the station will be surrounded by wide streets and plazas, approached by through streets from different sections of the city, served by the city subway system, and joined with the business center of the city by the road's four-track subway electrified suburban line. Furthermore, its spacious roof is designed to permit the landing of aircraft.

The new passenger station is one unit in the extensive program of improvements undertaken by the railroad at Philadelphia. The program also includes a main suburban

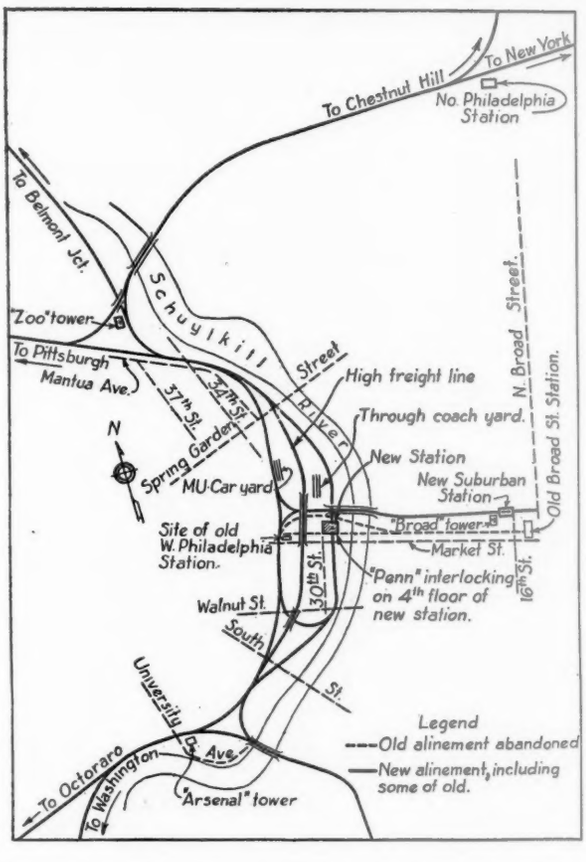
Massiveness and Pleasing Architectural Treatment

station, forming a part of the new main through station; a large suburban passenger terminal in the heart of the city, with a 22-story office building above; a modern terminal heating and auxiliary power plant, about 1,000 ft. northwest of the station; the extensive rearrangement of tracks, signals and interlocking facilities and the complete electrification of all train operation within the Philadelphia suburban area. In addition, the program contemplates extensive improvements on the part of the city in the way of street alterations, river front beautification and the conversion of a city-owned elevated railroad along the south side of the new station into a subway; it makes provision also for the construction of a new $10,000,000 post office building immediately south of and directly over the tracks of the new passenger station.

Status of the Terminal Work

Numerous phases of this project are completed. The terminal heating and auxiliary power plant was completed in the fall of 1929; the new office building in the center of the city, known as the Broad Street Station building, was opened to occupancy on April 1, 1930 the underground suburban passenger facilities in connection with this building were put in service during September, 1930, and all of the suburban lines into the city were completely electrified by the latter part of 1930. The city's contemplated improvements have been delayed because of the generally depressed economic conditions of the last four years, but the Federal government is pushing the erection of the new post office building, which will be completed late this fall.

The new main passenger station, the final completion of which awaits certain of the improvements to be made by the city and the closing of the last gap in the rail-



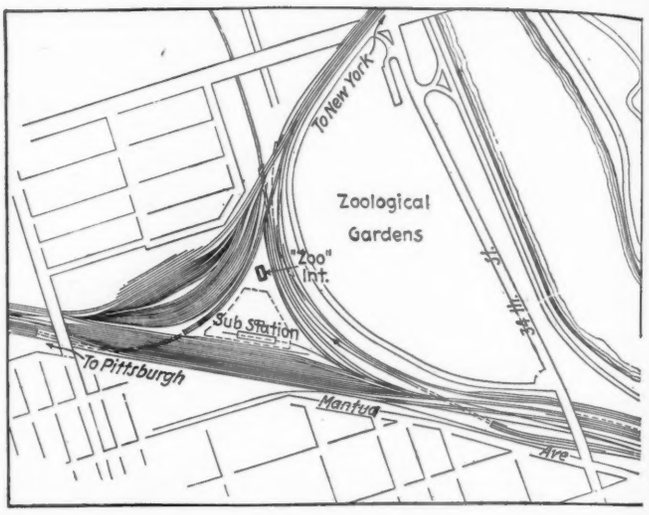
Single Line Track Diagram of the Philadelphia Terminal Area, Showing the Relationship of the New and Old Passenger Stations

way's main-line electrification between New York and Washington, D. C., i.e., between Wilmington, Del., and Washington, was partially opened to the public on December 15, 1933, with only two of its final ten through tracks in operation. However, the building stands today as an important operating unit, essentially complete except for the expansion of its track and related facilities.

Difficult Operating Problems Overcome

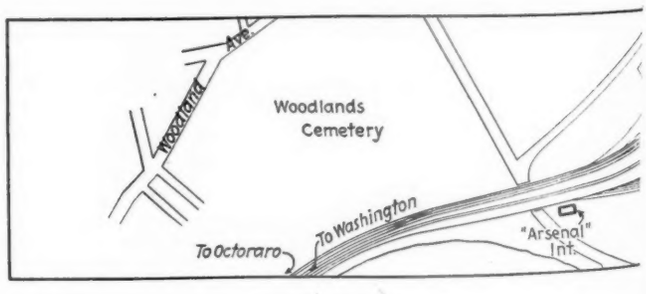
For many years the Pennsylvania has had three principal passenger stations in Philadelphia—its main Broad Street station, directly in the heart of the city; its West Philadelphia station, and its North Philadelphia station, the latter outside the area of the present improvement project. While these facilities proved adequate for many years, the growth of the city and train travel resulted in congestion at both the Broad Street and West Philadelphia stations, and presented difficult and costly operating problems. This is appreciated when it is understood that the Broad Street station is a stub terminal about one mile east of the road's main line to the north and south, which necessitated back-up movement, or the reversing of power and coach seats of all through trains which headed into it. Similarly, trains between New York and the West could not stop at West Philadelphia without inconvenience and loss of time, and, as a result, many of the through trains in this service made only the North Philadelphia stop in the city. This made it necessary for many Philadelphia passengers to travel to and from North Philadelphia in order to utilize the New York and the West through service.

Looking East Over the Old Multiple-Track Approach to the Old Broad Street Station, on the Right, and Over the New Four-Track Subway Approach to the Broad Street Suburban Station, on the Left



In addition to these difficulties, both the Broad Street station, opened in 1881 with 8 tracks and later increased to 16, and the West Philadelphia station, opened in 1903, were inadequate at times to handle the traffic imposed on them. The extent of the delay and inconvenience experienced in 1927, when the present improvements were begun, can be appreciated from the fact that at that time an average of 510 scheduled revenue trains were being operated in and out of the Broad Street station on each week day, about 220 of which were through trains. In addition, about 77 trains stopped at North Philadelphia, 47 of which also stopped at West Philadelphia. The total number of trains using the three stations in 1927 was, therefore, about 587 each week day, all but 30 of which stopped at West Philadelphia. This latter fact indicates the importance of the West Philadelphia location, which was the controlling factor in its selection as the site for the new main passenger station.

From West Philadelphia, the tracks entering the center of the city extended eastward to the Schuylkill river, which they crossed on old bridges, and then continued about three-quarters of a mile to the Broad Street station. East of the river the tracks were carried on a high earth fill, retained on both sides for the most part by massive stone masonry walls. This structure not only occupied highly valuable property, but, with low street underpasses, presented a barrier to normal vehicle and pedestrian traffic in this section of the city. With the completion of the track facilities at the new station,



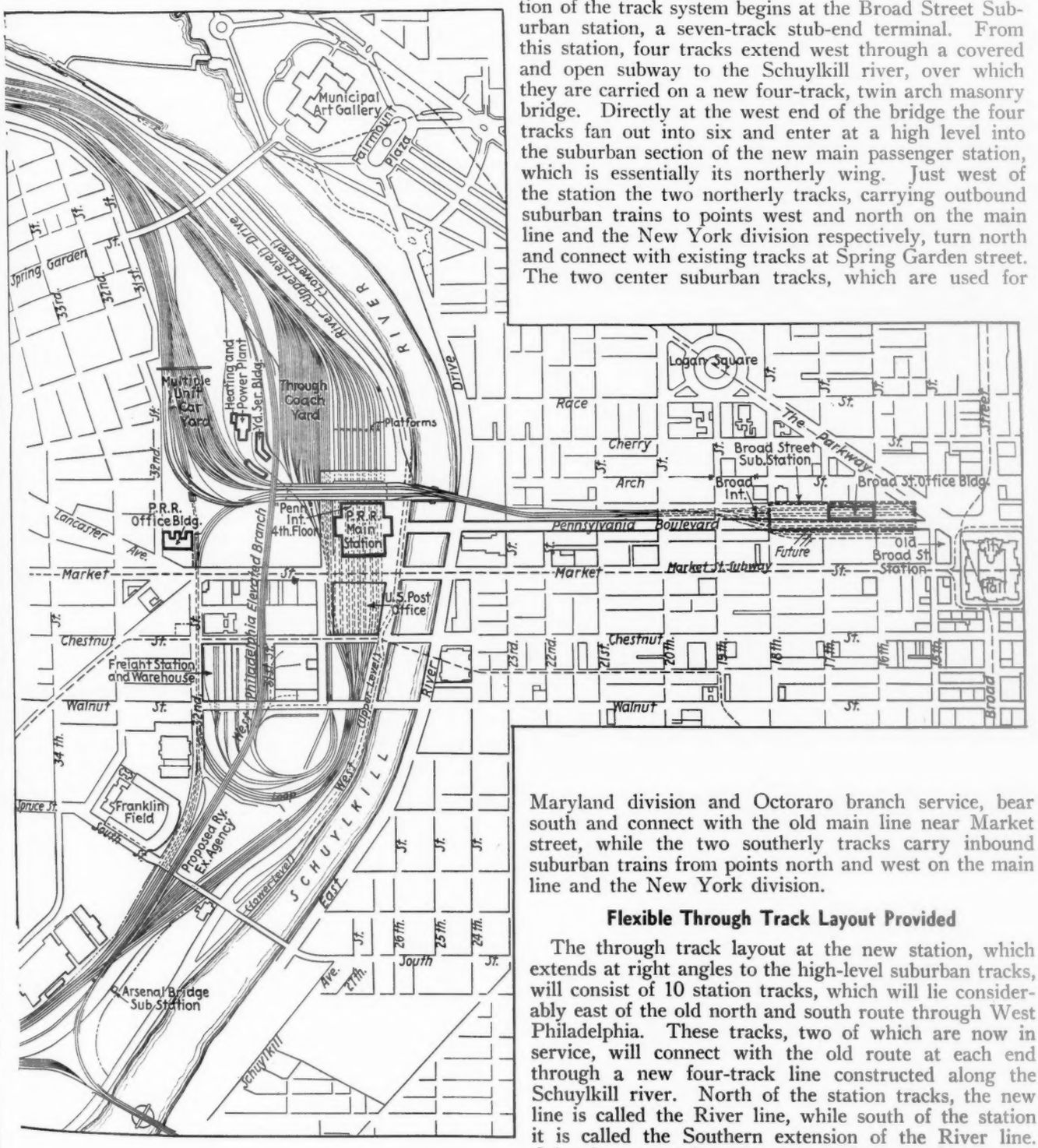
General Track Plan of the Pennsylvania's New Philadelphia Passenger Tracks and the Locations of the Important

practically all of this property, about 18 acres in area, will be made available for modern building development and for a wide straight boulevard between City Hall plaza and the east entrance plaza of the new station.

Track Changes Extend Over Large Area

The area involved in the improvements at Philadelphia includes approximately 380 acres of land immediately west of the Schuylkill river, and approximately 50 acres east of the river, all of which was intensively developed and, therefore, required extensive clearing. West of the river, the property involved extends from Forty-first street on the north to Gray's ferry on the south, a distance of about 3½ miles, and from Thirty-second street on the west of the Schuylkill river on the east, a maximum distance of 2,100 ft. throughout the center portion of the area, but narrowing down to a few hundred feet at the ends. East of the river the area involved is of a maximum width of about 500 ft., extending to the old Broad Street station.

The tracks in the new layout west of the river, including all of the through tracks and much suburban trackage, extend generally north and south, while those east of the river, which include only suburban tracks, extend generally east and west. The new suburban portion of the track system begins at the Broad Street Suburban station, a seven-track stub-end terminal. From this station, four tracks extend west through a covered and open subway to the Schuylkill river, over which they are carried on a new four-track, twin arch masonry bridge. Directly at the west end of the bridge the four tracks fan out into six and enter at a high level into the suburban section of the new main passenger station, which is essentially its northerly wing. Just west of the station the two northerly tracks, carrying outbound suburban trains to points west and north on the main line and the New York division respectively, turn north and connect with existing tracks at Spring Garden street. The two center suburban tracks, which are used for Maryland division and Octoraro branch service, bear south and connect with the old main line near Market street, while the two southerly tracks carry inbound suburban trains from points north and west on the main line and the New York division.



Terminal, Showing the Relationship of the Through and Suburban Structures Involved in the Improvement Project

Flexible Through Track Layout Provided

The through track layout at the new station, which extends at right angles to the high-level suburban tracks, will consist of 10 station tracks, which will lie considerably east of the old north and south route through West Philadelphia. These tracks, two of which are now in service, will connect with the old route at each end through a new four-track line constructed along the Schuylkill river. North of the station tracks, the new line is called the River line, while south of the station it is called the Southern extension of the River line. Other important through tracks include two loop tracks at the south end of the station layout, which will permit all through trains from the North and West to head into

the station at either end, and then proceed from the station on a continuous route to the West or North.

With this track layout, train operation will be materially simplified and improved. Trains from the New York division will use the River line from a point about 1¼ miles north of the station, opposite the Zoological Gardens. After stopping at the station, through trains to the South will then proceed over the Southern extension to its junction with the main line of the Maryland division and the Octoraro branch, about a mile south. This latter operation is now being effected over those station tracks already in service.

New York trains terminating in Philadelphia, of which there are 21 each day, may be routed either over the new River line into the main station, or over the suburban tracks into the Broad Street Suburban station, depending upon whether they will terminate west of the river or in the City Hall Square area. At the present time these trains are being routed over the suburban tracks through the suburban section of the main station, and are then diverted, just east of the river, to certain of the old tracks serving the old Broad Street station, which is still in service pending the completion of the new station.

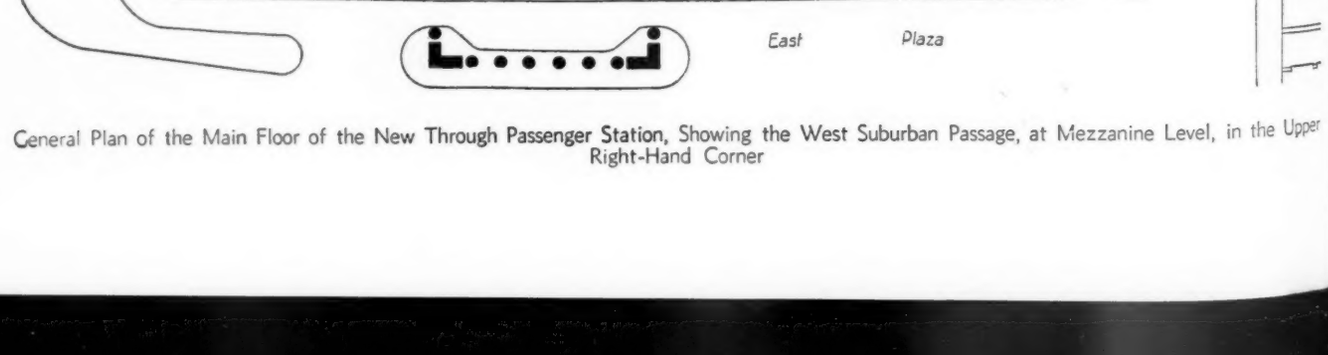
New York trains for the West will leave the station over the loop tracks, and will be turned completely around within the terminal area in a continuous movement and headed over existing tracks to the West. Trains for New York will be able to head out of the station in either direction, using either the new line along the west bank of the river to the Zoological Gardens, or the loop to existing main tracks beneath Thirty-second street.

The loop tracks in the new layout are one of the essentials of the terminal plan. In fact, the ability to develop this loop, more than any other consideration, dictated the specific location of the new station west of the river, for it will make possible the operation of trains from New York to the West, and vice-versa, in a continuous movement through West Philadelphia, which was not possible under the old arrangement.

The New Main Passenger Station

The new main passenger station is located on the center line of the proposed Pennsylvania boulevard from the center of the city, and occupies the equivalent of two city blocks. On the east the station is flanked by the Schuylkill river and a two-level river drive still to be completed by the city; on the west it is bounded by a wide plaza and a widened section of Thirtieth street; on the south by a plaza and widened Market street, from which the present elevated rapid transit structure will be removed; and on the north by a new wide extension of Arch street, which will connect the river drive with Thirtieth street. Thus, the new station will be, and is in part now, surrounded by wide streets and plazas, which will permit the ready flow of traffic in all directions. Incidentally, they will also afford large parking areas for railroad patrons.

The station itself, which is of steel and concrete construction, faced with Alabama limestone, covers an area 639 ft. long in a north and south direction and 327 ft. wide in an east and west direction. Impressive colonnaded porticoes 150 ft. wide and 70 ft. deep, centrally located in the east and west elevations, face the river drive and the center of the city on the one hand, and the west plaza and Thirtieth street on the other. The porticoes, with their massive Corinthian columns, 11 ft. in diameter and 71 ft. high, surmounted by a simple yet classic attic, are the dominant masses in the east and west facades. On each side of the porticoes are lower wing-like sections, presenting a system of broad piers



General Plan of the Main Floor of the New Through Passenger Station, Showing the West Suburban Passage, at Mezzanine Level, in the Upper Right-Hand Corner

The Station Area as it Appears from the Center of the City at the Present Time—New U. S. Post Office Building at the Left

and windows, capped similarly to the porticoes in simple classic style to bring into harmony the entire facades. The south wing extends a distance of 170 ft. to Market street and the north wing a distance of 315 ft. to Arch street, to include the high-level suburban facilities, which, from an architectural standpoint, form an integral part of the station building proper.

Both the Market and Arch street facades are lower than even the less prominent sections of the east and west elevations, but they adhere closely to the general architectural composition and consist essentially of a series of tall window bays separated by pilasters, with the whole bounded by massive corner pylons. In harmony with the prominent vertical lines of the structure, ornamental iron mullions, continuous through four stories, divide the windows in all elevations into tall narrow panels, interrupted only by iron spandrels at the floor levels.

All Facilities Grouped About Concourse

Entering through the large bronze-frame glazed doors sheltered by the east portico, which will form the main entrance to the station, one passes through a vestibule directly into the main concourse of the station, a rectangular area 290 ft. long by 135 ft. wide, and rising 95 ft. to a flat coffered ceiling decorated in red, gold and cream colors, with the red prevailing. The ceiling is suspended from a series of roof trusses, which also support a reinforced concrete roof deck which is waterproofed with five-ply roofing. It is interesting to note that both the roof trusses and the roof slab were designed to permit the landing of airplanes and other air craft, if that should be considered desirable in the future, either on special occasions or as a regular feature of service.

Both sides of the large concourse area are fitted with broad high window bays between massive piers faced with Travertine marble, the bays being broken into narrow panels of light-diffusing glass by continuous ornamental iron mullions. The east and west ends of the concourse present a face of six massive fluted columns against a paneled glass background.

From the concourse, which extends transversely over the through track and platform layout, all trains and all of the auxiliary station facilities can be reached. All of the five through train platforms beneath the concourse are reached by stairs and escalators leading directly from each side of the central area of the concourse, and all of the station service facilities are grouped about the concourse, plainly identified by bold, gold-lettered signs about the walls.

The basic idea of the station layout was to group in the wing north of the concourse all necessities for the traveler, and, in the wing to the south of the concourse, all those facilities which might be considered as special or less essential conveniences. Thus, directly north of the concourse, and in full view, is the ticket lobby, an area about 50 ft. wide, equipped with marble-top, bronze grilled ticket counters of the open-face type on each side of a wide passage extending centrally through the wing. Directly back of the ticket lobby is the main waiting room, 145 ft. long by 60 ft. wide, and beyond this area, directly beneath the elevated suburban service track level, are located such facilities as men's and women's toilets, a barber shop, and a women's rest room. In addition, beyond the waiting room are located a bus terminal ticket office and a number of concessions, which face directly on what is called the north exit concourse, an open area, 50 ft. wide, which extends along practically the full width of the building and opens on a bus runway directly alongside Arch street. Other facilities in the north wing include a baggage room along the east face of the building, a parcel checking room at the west end of the waiting room and telephone booths at convenient points.

In the wing south of the main concourse there are two main areas, separated by a central arcade 45 ft. wide at right angles to the concourse and fronting on a south exit concourse, which is a high ceiling area, 50 ft. wide, extending along the full length of the Market street front of the building. In these south wing areas, provision is made for a dining room, a lunch room, a cafeteria, kitchen facilities, a drug store, and numerous concessions, in addition to additional telephone and toilet facilities and another parcel checking room.

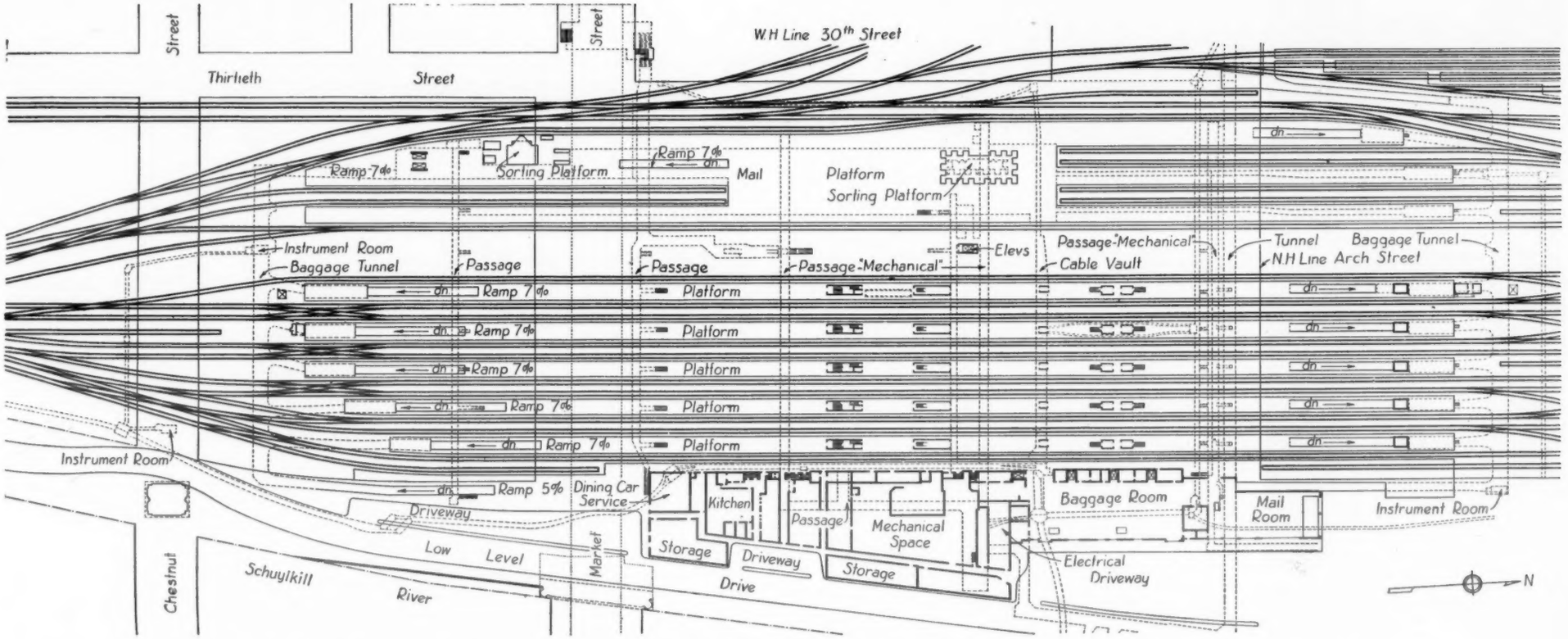
Through and Suburban Sections are Joined

The suburban facilities at the station are reached by various means at several points, the principal means being a ramp leading upward to the north from the northwest corner of the main concourse. This ramp, which is about 20 ft. wide and on an 8 per cent grade, leads directly into a suburban mezzanine lobby, which, in turn, continues transversely beneath the suburban track level in what is called the west suburban passage, from which suburban trains are reached.

Other means of approach to the west suburban passage are stairs directly from the west end of the north exit concourse of the main station; another flight of stairs from the main floor passageway at the west end of the waiting room; a second ramp, 12 ft. wide and on a 9 per cent incline, which extends from the main passageway through the waiting room and bus terminal area; and five electric elevators, which, in addition to leading down from the main floor level to the through track platforms, also extend up to a mezzanine hallway having connection with the west suburban passage. A second suburban mezzanine passage is provided beneath the

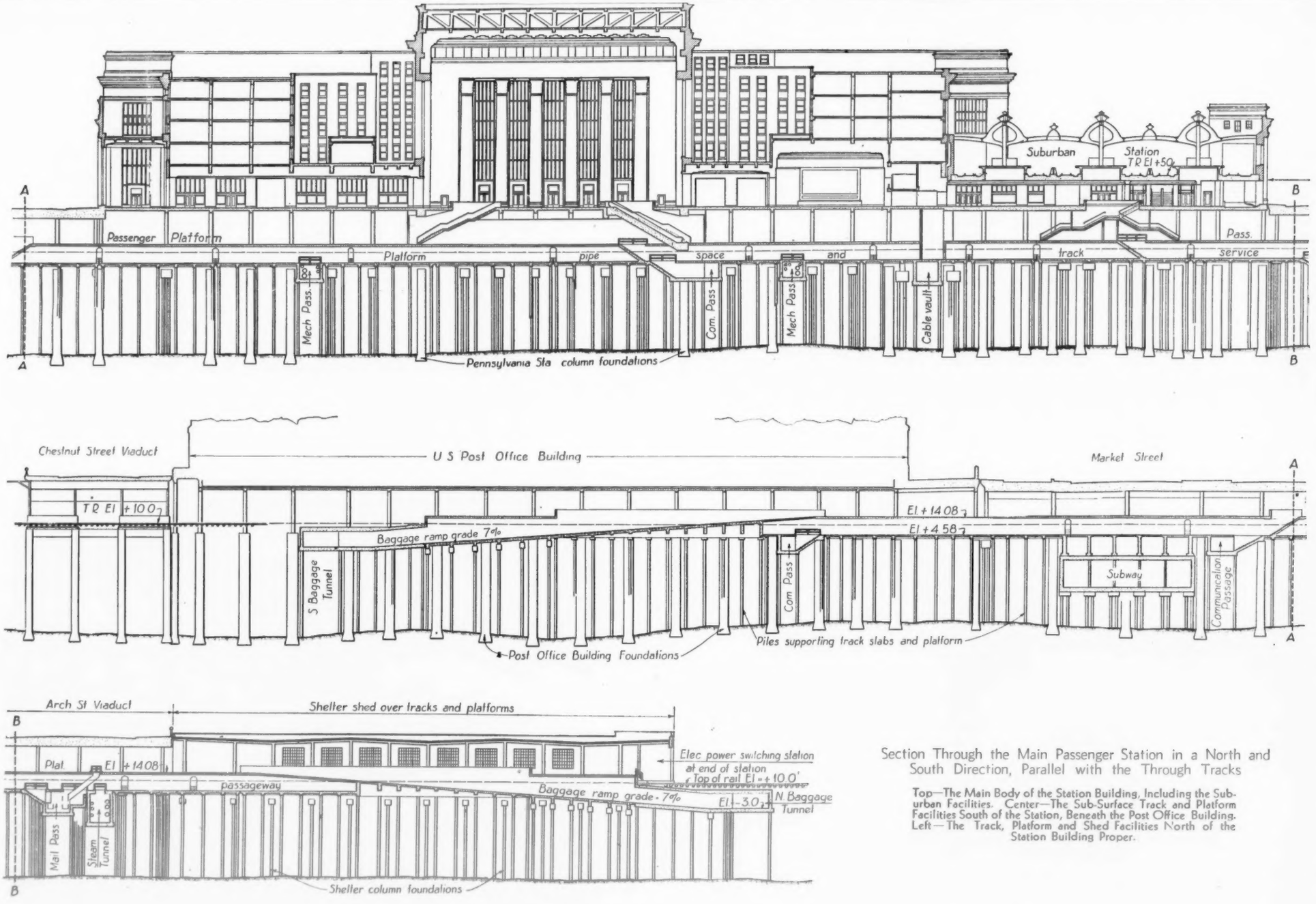
Left—The Spacious Ticket Lobby, with its Open-Face Marble-Top Ticket Counters, Opens Off Directly from the Main Concourse

Right—The Main Waiting Room Is Pleasing and Restful in Appearance



The Track and Passenger Platform Layout at the Main Station, Showing Also the Track-Level Mail Handling Facilities Along the West Side

The Track and Passenger Platform Layout at the Main Station, Showing Also the Track-Level Mail Handling Facilities Along the West Side

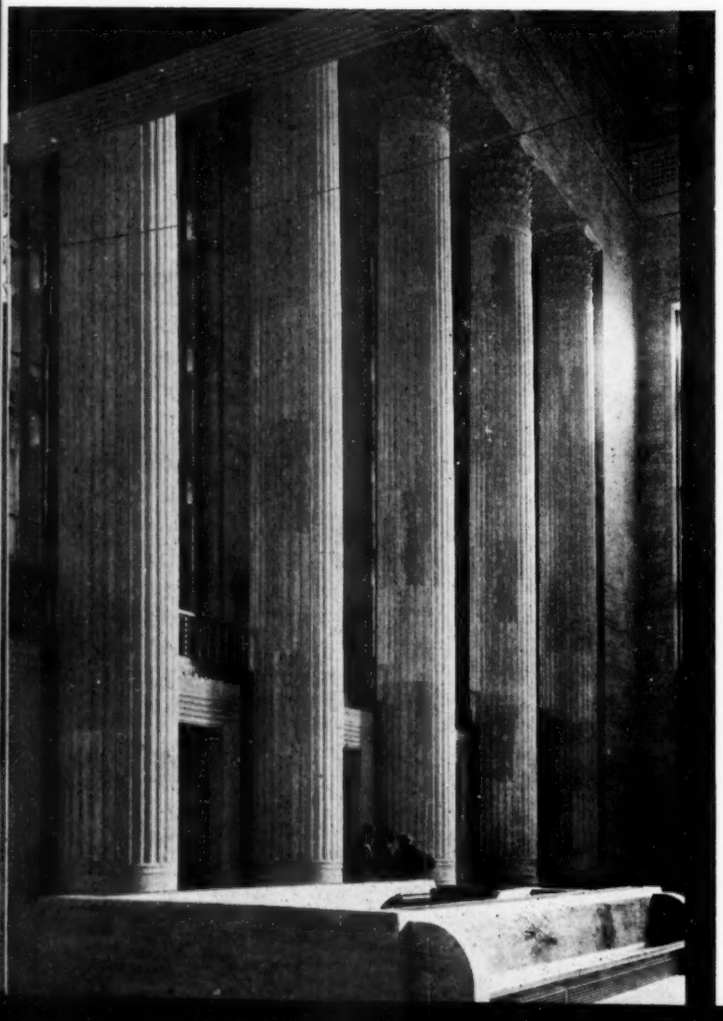


Section Through the Main Passenger Station in a North and South Direction, Parallel with the Through Tracks

Top—The Main Body of the Station Building, Including the Suburban Facilities. Center—The Sub-Surface Track and Platform Facilities South of the Station, Beneath the Post Office Building. Left—The Track, Platform and Shed Facilities North of the Station Building Proper.

The Chapel, Which Will Be Used as a Mortuary at Times, Is One of the Unusual Features of the New Passenger Station

Below—The East and West Ends of the Concourse Present a Face of Six Massive Fluted Columns Against a Paneled Background of Glass



suburban tracks at the east end of the suburban station, and is reached by stairs directly from the main station level; this facility has not yet been put in service.

Main Station Track Level

The through track layout extends directly beneath the building and will, when completed, consist of 10 passenger tracks, grouped in pairs, with space available for the construction of two additional tracks if needed in the future. The tracks will be served by five high-level island platforms, which will be used for both movement of passengers and the trucking of mail and baggage. The trucking, however, will be confined entirely to the ends of the platforms and will, therefore, not interfere with the movement of passengers. In addition to the passenger platforms, one wide two-level platform west of the passenger tracks is provided exclusively for handling mail.

The passenger platforms, only one of which is in service at the present time, are to be 24 ft. 10 in. wide and 1500 ft. long, with longitudinal closed-in working chambers beneath. At the south end of the station they will extend beneath Market street and the north end of the new post office building, while at the north end they will extend out into open area and will be protected from the weather by a steel frame canopy continuous over the tracks.

Between each platform and the main station level there will be three stairways, an escalator and an electrically-operated elevator. Two of these stairways and the escalator extend up into the main concourse; the other stairway leads up into the north exit concourse; while the elevator operates to the passageway around the north side of the main waiting room and to a mezzanine hallway above, having connection with the suburban facilities. In addition to these means of access to and exit from the through platforms, stairs will be provided from each platform direct to the Market street subway when that facility is put in service.

Since all of the passenger platforms are to be used for the handling of baggage, trucking ramps have been provided at both ends, leading down to baggage tunnels extending transverse to and below the station tracks. Both of these tunnels have connection by ramp with the mail-handling platform and are continued beneath the east front of the building to the track-level baggage room. This low-level baggage room faces on the lower level of the river drive, affording ready access to trucks, and is connected with the concourse-level baggage room and the suburban service platforms above by means of elevators. It is expected that when the station is in full operation, the baggage facilities will be called upon to handle approximately 300,000 pieces a year.

Interior is Finished and Decorated Attractively

In the interior finish and decoration of the new station materials have been utilized which will not only be pleasing to the eye, but which will retain their utilitarian value with a minimum of cleaning and maintenance. The main concourse is especially simple, with its Travertine wall faces, Tennessee marble floor and coffered ceiling, the most striking notes being the dominating red in the ceiling, the consistent use of bronze fixtures and bronze paint in the ironwork decoration, and ten large prismoidal lighting fixtures in bronze and translucent glass, 18 ft. long, which are suspended from the ceiling in two longitudinal rows.

In almost every respect the smaller public areas are

related harmoniously to the main concourse. For example, the arcade, the ticket lobby and the north and south exit concourses are faced with Travertine and have marble floors. Similarly, the main waiting room is surrounded by Travertine faced walls and piers, has a marble floor and only the simplest of embellishment, the outstanding feature of which is a coffered ceiling border decorated in blue and gold. All of the back-to-back settees in this room are of solid walnut. An interesting addition to the otherwise plain walls is the sculptured plaque, the "Spirit of Transportation," done by Karl Bitter, which for many years was located in the old Broad Street station.

The lighting fixtures throughout these principal areas harmonize closely with those in the main concourse, most of them being of the same design, but modified in size. Likewise, all fixtures and such decoration as is afforded are consistently in bronze.

The dining facilities to be provided at the station will be modern in every respect, and the interior decoration and furnishings of the areas devoted to these facilities will reflect the character of the service afforded. Thus, the cafeteria and lunch room walls will be finished with structural glass to harmonize with the colors in the Terrazzo floors, and all of the serving equipment will be of stainless steel. A more quiet and conservative tone will prevail in the dining room, the walls of which will be finished with walnut paneling and mirrors.

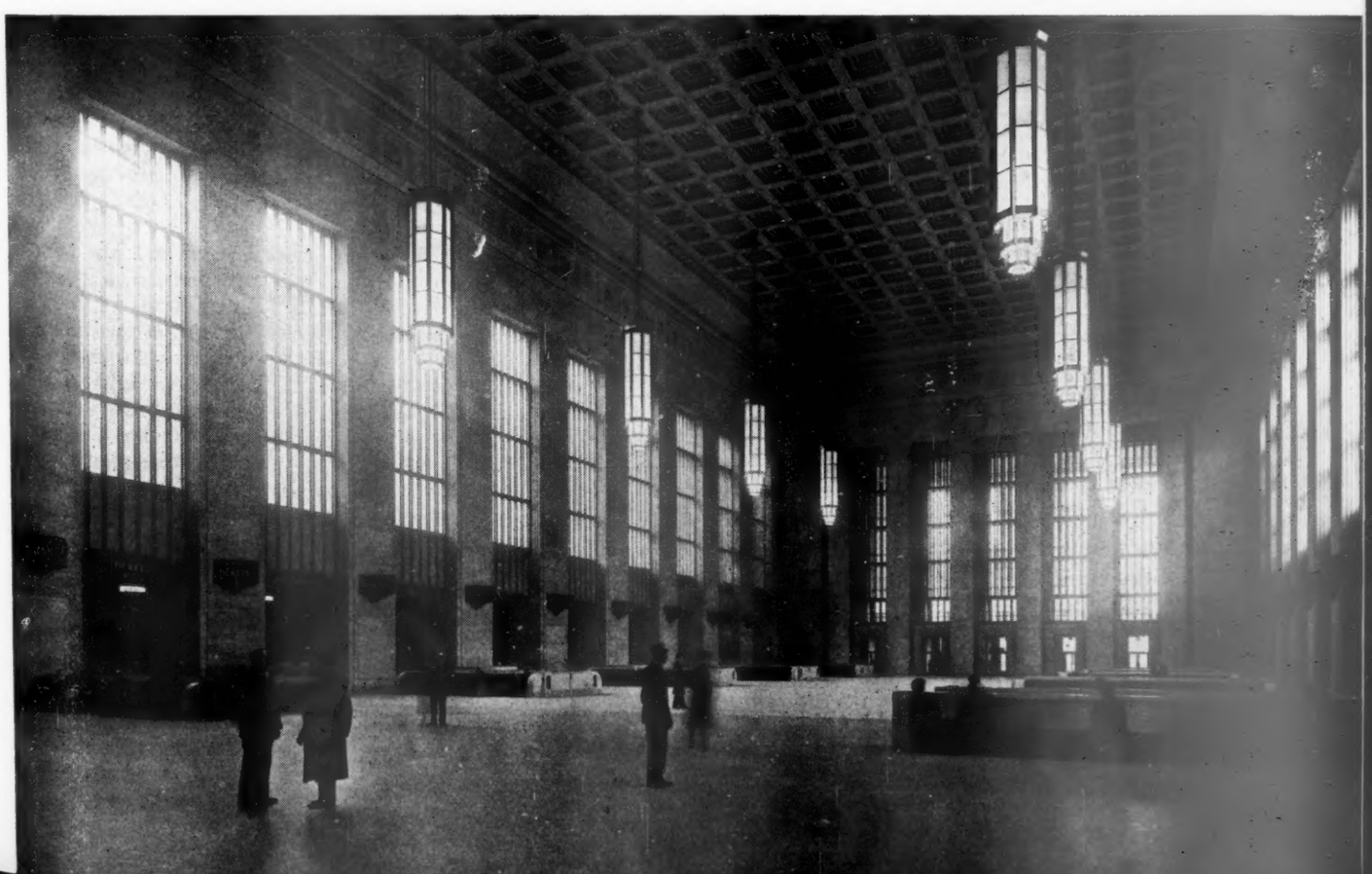
The barber shop and toilets are also finished with structural glass walls, have Terrazzo floors, and are fitted with up-to-date plumbing fixtures and equipment, all of which promotes cleanliness and sanitation. Contrasted with the brightness of these rooms, the women's rest rooms are decorated in softer tones and are equipped with comfortable furniture to create a restful atmosphere.

Bold, Cold-Lettered Signs on Both Sides of the Concourse Clearly Identify and Locate the Important Station Facilities

Chapel and Hospital Rooms Provided

Most of the three upper floors of the station in both the north and south wings will be occupied by railroad or allied offices, the north and south office areas on each floor being connected by glassed-in balconies between

Below—The Spacious Concourse with its Colorful Flat Coffered Ceiling, 95 ft. Above the Tennessee Marble Floor



the exterior walls and the interior colonnades at the east and west ends of the main concourse. These floors have been finished in more or less the usual manner, except that some of the ceiling areas have been treated with acoustical material. Special facilities provided on these floors include a chapel or rest room and an emergency hospital for the use of both patrons and employees at the station.

The chapel, which is one of the first, if not the first, to be provided in a railroad station, is a room 54 ft. long by 20 ft wide, and 20 ft. high, located on the second floor where it is entirely isolated from the activities of the station proper. It is expected that this room will be used on occasions as a mortuary in connection with the movement of corpses over the railroad. In every respect the interior of the room reflects its purpose. The floor is carpeted in green to harmonize with the furniture upholstering, the ceiling is an artificial skylight producing soft subdued illumination, while the walls are faced with Botticino marble panels and murals in oil.

The emergency hospital, which is located on the fourth floor, is completely equipped with men's and women's wards, waiting rooms, examination rooms, and with offices and quarters for doctors and nurses, who will be in constant attendance. Approximately 3300 sq. ft. of floor area is devoted to these facilities and each of the rooms is appropriately finished and furnished.

The West Suburban Passage Transversely Beneath the Suburban Tracks and Platforms at the Main Station

Suburban Facilities

The major units involved in the suburban passenger facilities, which were described in detail in the *Railway Age* for November 15, 1930, are the suburban station west of the river, in conjunction with the main station, and the Broad Street Suburban terminal in the City Hall Square area.

The West Philadelphia unit, which is both architecturally and physically an integral part of the new through station, is laid out on a structural steel viaduct at right angles to and about 40 ft. above the through tracks of the main station, and consists essentially of six station tracks and three high-level intermediate platforms about 1,100 ft. long. The tracks are ballasted and carried on heavy reinforced concrete deck slabs supported by the viaduct structure. The platforms, which are of concrete construction, are covered by attractive glazed cement tile sheds, continuous over the tracks.

The platforms are each served by two sets of stairs and an escalator near their west ends, leading down to what is known as the west suburban passage, and by an additional stairway, which extends down to a similar suburban passage near their east ends. There is also a stairway leading to the west side of Thirtieth street. Of the suburban passages, both of which extend at right angles beneath the tracks, the westerly passage is the more important and the only one in service at the present time. This passage, which affords direct exit to Thirtieth street, opens at its south end into a suburban mezzanine lobby. This lobby leads to the passenger ramp to the through station concourse and affords a suburban waiting room, 63 ft. by 28 ft., with 10 back-to-back walnut settees. The east-end mezzanine-level suburban passage does not afford a waiting room, but has an exit direct to the river-front plaza, and another exit to the north exit concourse of the main station as described earlier.

Broad Street Suburban Station

The Broad Street Suburban station is located immediately north and west of the old Broad Street station, beneath and beyond the limits of the Pennsylvania's new 22-story Broad Street Station building. This terminal occupies principally a mezzanine floor 15 ft. below the street level, and a track level, with platforms, which is about 20 ft. below the mezzanine floor. These two levels cover an area which is approximately 1,000 ft. long by 200 ft. wide.

On the mezzanine floor of the terminal are located the main station concourse, waiting rooms, ticket offices, an information desk and all of the auxiliary facilities usually provided at large stations for the convenience of passengers, while on the track level, as at present laid out, there are four high island platforms, each 1,134 ft. long and 24 ft. wide, and 7 stub-end station tracks. Final plans call for two additional tracks along the south side of the present layout, and ultimately provide for three more tracks and two additional platforms along the south side, which latter facilities will be constructed only when service demands require.

One of the features of this terminal is the numerous means of entrance and exit provided to expedite the movement of passengers to and from the station. Each track platform is served by four broad stairways and an electric passenger elevator leading to the concourse floor, while 2 large elevators and 12 entrances and exits lead from the concourse to the street level or the Broad Street Station building above. The latter exits and

Looking West Over the Covered Tracks and Platforms of the Suburban Section of the Main Station

entrances include long wide ramps on easy grades leading from the east ends of the mezzanine and track levels to the City Hall station of the Board Street city subway and beyond, and, temporarily at least, to the old Broad Street passenger station.

Heating, Ventilating And Electrical Systems

The heating of the main passenger station and its suburban wing is essentially by direct radiation, but this is supplemented by an extensive forced ventilation system which supplies a continuous flow of fresh filtered air throughout the building, which is warmed during those months in which heating is required. All of the steam required in heating is furnished by a new steam heating and auxiliary power plant, which is described briefly later in this article.

Steam is delivered to the station through a pipe tunnel at 250-lb. pressure and is distributed about the upper floors of the building at 100-lb. pressure in a loop system located on what is called a pipe story, directly above the third office floor. Here, the pressure is reduced to five pounds and is passed downward to the radiators on the office floors. Steam for direct radiation on the main station level is reduced to five pounds pressure in a mechanical area beneath the east portico and is passed upward to the radiators.

Exposed direct radiation radiators are employed in all of the office areas, but in the main station areas, the radiators, about one-half of which are of the latest convection type, are all concealed in recesses in the walls and piers, with bronze grills over the circulation openings. A low pressure return system carries all condensate to tanks under vacuum in the basement, from which it is pumped back to the central steam heating and auxiliary power plant.

All of the piping in the heating system is of copper-bearing steel pipe, and all of the radiators are equipped with temperature control valves. Altogether, there is approximately 30,000 sq. ft. of radiation on the first floor level and a total of approximately 62,000 sq. ft. throughout the building. All of the piping in the cold water system throughout the building is of galvanized wrought iron pipe, while all of that in the hot water system is of brass.

In the system providing ventilation for the main floor of the station, large fans in the basement area beneath the east portico pull fresh air down from above the roof of the building through an air shaft and into a plenum chamber. From here it is pulled through steam coils and oil filters into the fans. Expelled from the fans, the air is forced through secondary steam heaters equipped with thermostatically-controlled by-pass dampers, and thence through the different fresh air duct systems which lead to all of the different first floor areas, except the main concourse. No fresh air is discharged directly into the concourse as this is not required for good ventilation in a room of such height and volume, especially one with so many openings. Entirely separate duct systems

The Track Level of the Broad Street Suburban Station, Directly Beneath the 22-Story Office Building in the Business Section of the City

exhaust the used air from the main station level, disposing of it at convenient points.

Ventilation of the suburban section of the station, including the area on the main floor, is provided by independent fan units located above the suburban track level at four different points. Ventilation of the office floors is effected by fans in four independent fan rooms on the pipe story, one of these rooms being located near each corner of the building. Altogether, there are a total of 12 fresh air and 15 exhaust fans in the various systems, with a combined capacity for handling 507,400 cu. ft. of air a minute.

Electrical Systems at the Station

All electrical current required normally throughout the terminal is purchased from a public utility which furnishes 13,200-volt power to a main receiving and distributing sub-station at Twenty-Third street, about centrally located in the terminal area. From this point, 13,200-volt feeders extend to two sub-stations in the main passenger station to take care of the station requirements. One of these, called the north sub-station, is located in the basement on the east side of the building, while the other, called the south sub-station, is located south of the main concourse, at the second floor level in the south light court.

In the north sub-station there are two banks of three 667-kv.-a. transformers, each with separate 13,200-volt feeders, and tied together with automatic tie breakers which operate in case of power failure. These groups of transformers feed out at 115 and 230 volts and take care of all lighting and power requirements in the suburban section of the station and in the main station building north of the concourse.

The south sub-station includes two banks of transformers, each consisting of three 463 kv.-a. units and each with separate 13,200-volt feeders from the Twenty-third street sub-station. This sub-station furnishes all of the lighting and power requirements for that part of the station not supplied from the north sub-station, including the mail handling facilities at the track level.

In addition to the public utility power feed to the passenger station, there is a 2,300-volt emergency power feed to the north sub-station from the terminal heating and auxiliary power plant. This auxiliary feed energizes a bank of three 200-kv.-a. transformers, which, in turn, supply current for emergency lighting throughout the building and for emergency operation of fire pumps located in the basement.

Special electrical systems provided at the station include a clock and time-recording system, involving a total of about 107 clocks; a burglar alarm system connecting each ticket seller's space with an indicator in a police room on the third floor in the north wing; an annunciator system whereby any of the ticket sellers can call the ticket agent for assistance without leaving his space; a complete underfloor twin duct system in the office floors, one duct for distributing 110-volt current, and the other for carrying telephone lines and low voltage current for the operation of buzzer communication systems; and a complete porter call system on the main station level. In the last mentioned system, call buttons are located at points throughout the main floor, principally at the baggage and parcel rooms, for summoning porters, who under ordinary conditions, are required to congregate near the east and west vestibules. At both of these points indicator panels are provided which notify the porters of the specific places where their services are required.

In addition to these different electrical communication systems, many special areas of the station, including the information booth, the Pullman offices, the station master's office, the telegraph office, the telephone exchange, the crew clerk's office and the baggage rooms, are joined by a pneumatic tube system, making personal messenger service unnecessary in conducting most of the routine station business.

New Yards and Track Construction

Prior to the improvements at Philadelphia, there were nine yards within the terminal area for servicing and storing coaches, multiple-unit cars, Pullmans, baggage cars and locomotives. All of these have been replaced by two modern yards, one for the handling of multiple-unit trains and the other for through coaches, with assigned tracks for the service storage of electric locomotives.

The through coach yard, which has 27 tracks, with intermediate service platforms, is located immediately north of the station and west of the through station tracks. This yard, with tracks ranging from 260 to 1,500 ft. in length, all with switching connection at both ends, affords capacity for 272 standard coaches. The tracks are spaced alternately on 16-ft. and 19-ft. centers, except the more easterly tracks. Concrete service platforms are located between all tracks, those in the narrower spaces being 5 ft. 6 in. wide and those in the wider spaces 8 ft. 6 in. wide.

All of the platforms are supported on reinforced concrete foundation walls, and are crowned for drainage, with their outer edges level with the top of adjacent track rails. Crosswalks connect all of the platforms near each end of the yard. The entire south end of the yard, which is level, is subdrained and provided with catch basins having connection with the city's storm water sewer system. This was not necessary at the north end of

The Through Coach Yard Has 27 Tracks with Intermediate Concrete Service and Trucking Platforms

A Section of the Yard Used Exclusively by the Multiple-Unit Trains in the Electrified Suburban Service

the yard, which is on an 0.8 per cent grade downward to the south.

A feature of the new coach yard is the adequacy of the service facilities provided, which include steam, air, water and battery-charging outlets adjacent to each track, all of the outlets being located in or along the narrower service platforms, leaving the wider platforms unobstructed for trucking. Without any attempt to stagger the different outlets, the steam outlets are spaced about 320 ft. apart, the air and water outlets 80 ft. apart, and the battery charging outlets 100 ft. apart.

The air at the yard is supplied at 100 lb. pressure from compressors in the terminal heating and auxiliary power plant, and is distributed along the different tracks in 1½-in. standard-weight copper-bearing steel pipe with welded joints. The steam supply, also furnished by the terminal heating plant, is distributed at 110-lb. pressure in a piping system of extra heavy steel pipe from 3 in. to 8 in. in diameter. In the water system, four mains lengthwise of the tracks, with suitable laterals, bring the water to non-freezing service boxes, which, for sanitary reasons, are located in the center of the service platforms. All three service systems are laid out in a multiple-loop arrangement, with suitable valves, whereby pressures are automatically equalized and each system can be sectionalized at any time for repairs without interrupting service in the yard generally. In addition to the water service piping system in the yard, a water system for fire protection is provided in which the mains are laid lengthwise of the yard at every fourth track, with 2-in. outlet boxes located at intervals of about 400 ft. and staggered with those in the adjacent mains on each side. All of the outlets are provided with standard hose couplings for ready use by the city fire department.

All of the steam, air and water lines are brought to the coach yard in a large reinforced concrete distribution tunnel which extends from the terminal heating and auxiliary power plant laterally across the south end of the yard. From this tunnel, trenches longitudinally through the yard beneath certain of the narrow service platforms, and buried laterals from these, carry the pipe lines to the various service outlets, with the exception of the air lines, which, for the sake of ready accessibility, are laid above the surface directly on the ends of the track ties. However, all of the steam and water lines in the main distribution tunnel and in the trenches beneath the yard platforms can be inspected when desired, since both of these passages are provided with manhole entrances at intervals and are of ample size to permit the passage of workmen.

Multiple-Unit Coach Yard

The coach yard for the storage of the multiple-unit cars used in the electrified suburban service lies directly west of the through coach yard, between the inbound and outbound suburban tracks which carry suburban trains to and from points east and west on the main line and the New York division. This yard, which is provided with switching connections at both ends, has 16 tracks with capacity for 263 cars. All of the tracks are served by longitudinal plank walkways, with cross walks at each end, and, as in the through coach yard, the different tracks are served by air and water service outlets. No sub-drainage was necessary in the yard since its topography is such as to permit ready run off.

Floodlighting

Both the through and multiple-unit coach yards and their approaches are equipped with floodlights for night illumination in an overlapping dual installation of projectors, which not only minimizes shadows but also insures some illumination if half of the system should go off for any reason. Altogether, the system includes five towers of the lattice type, 100 ft. high, and a total of 70 projectors of varying degrees of angularity.

All of the projectors are of the trunnion type, fully enclosed, with glass-type reflectors. Plain lenses are used for producing the narrow and medium beams, while stippled lenses are used in the diffusing projectors. Hoods are provided over all of the lenses to shield them from soot and dust, and to reflect downward, immediately in front of the towers, any stray light in the upper part of the beams. The floodlights serve a total area of approximately 1,500,000 sq. ft. in both yards, the intensity of the illumination afforded ranging from 0.32 to 0.42 lumens per sq. ft.

Details of Track Construction

One of the most interesting phases of the improvements from a strictly railroad point of view is the extensive track layout involved and the unusual degree of planning necessary to make the extensive track changes without interfering with train operation. The magnitude of the track problem is seen in the fact that, when completed, it will have involved the construction of 34.2 miles of main line and 27.5 miles of yard tracks, in addition to about 11.3 miles of temporary tracks laid and removed during the transition period. The special trackwork will include 334 turnouts, 46 slip switches, 9 double crossovers and 3 special crossings. About 75 per cent of the track work is completed.

Of the permanent main tracks, all of which have been or will be laid with new 130 and 131-lb. rail, 23,648 ft. will be supported on concrete in a permanent type of construction, and 156,726 ft. will be of standard main-line construction carried on stone ballast. The yard tracks throughout have been constructed of second-hand

The Short-Tie and Concrete Bed Track Construction Employed at the Main Passenger Station

100-lb. cropped rails carried on either 18 in. of cinders or 12 in. of cinders topped with 6 in. of crushed slag. Curvature was kept to a minimum, reaching a maximum of 10 deg. 30 min. in the case of certain of the suburban tracks just west of the main station, and 9 deg. 30 min. in the case of the through loop tracks. All of these sharp curves have been equipped with rail lubricators to minimize rail and wheel flange wear.

The maximum grade on the through tracks approaching and leaving the station is 0.75 per cent, but there is a relatively short section of 2.2 per cent grade in the suburban track subway connecting the Broad Street Suburban station with the main station, and a short section of 2.5 per cent grade, compensated, in the Maryland Division Suburban connection just west of the West Philadelphia Suburban station. These latter grades, however, present no difficulties in the operation of the electrified multiple-unit trains in the suburban service.

With few exceptions, standard trackwork has been used throughout the entire terminal layout. Number 10 turnouts have been used in all of the passenger train tracks, except directly at the Broad Street Suburban station where No. 9 turnouts were required to clear certain building columns. Number 10 double-slips were made the basis of the through track layout at both ends of the main station. To protect switch points against wear, the straight stock rails of all switches were milled to house the points, and, in addition, at those points where the wear might be excessive, switch point guard rails were also provided.

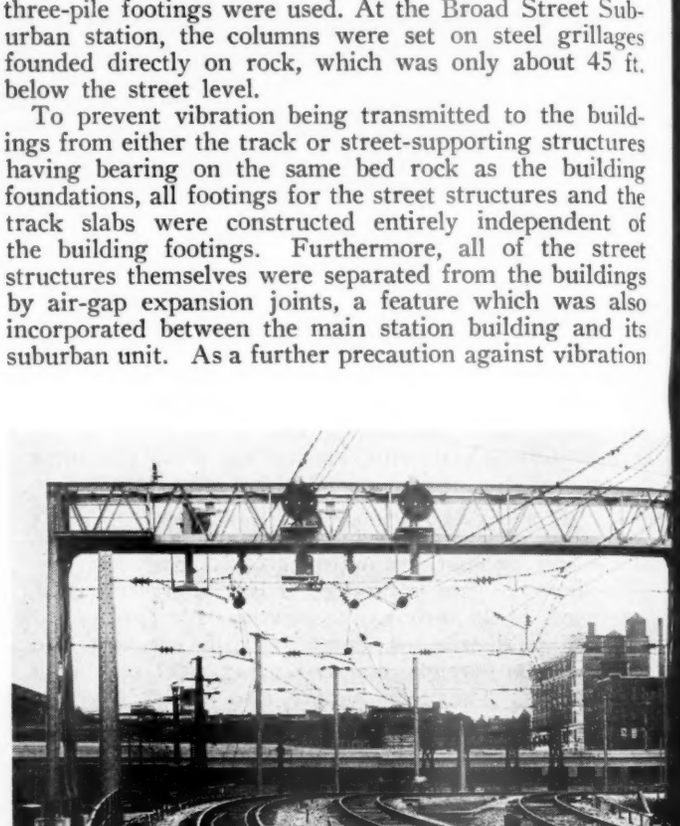
The concrete track construction employed at the Broad Street Suburban station and in the through tracks at the main passenger station is similar, consisting essentially of short length wooden ties embedded in a heavy concrete bed, the rails being supported on heavy tie plates and secured to the tie blocks by cut spikes. Within the Broad Street Suburban station the concrete track bed is laid directly on an 8-in. concrete mat sub-base, which, in turn, because of ground water, is supported on 18 in. of well-drained gravel.

Because of unstable ground conditions in the main station area, the concrete bed supporting the short ties of the through tracks is laid on wide, heavily reinforced concrete slabs. These base slabs are, in turn, supported on heavy steel girders which extend crosswise of the tracks and have bearing on concrete piles poured in steel tubes which were left in place.

Difficult Foundation Problems

Two of the most interesting engineering problems in connection with the new stations at Philadelphia were the construction of foundations which would prevent the transmission of vibration into the buildings, and, in some cases, making provision to take care of ground water seepage into the track levels. The column foundations at the main station, except those beneath the floor of the main concourse, are caissons carried down to bed rock, which was found generally at a depth of 70 to 80 ft. below the ground or street level, or from 50 to 60 ft. below the track level. Beneath the concourse floor, three-pile footings were used. At the Broad Street Suburban station, the columns were set on steel grillages founded directly on rock, which was only about 45 ft. below the street level.

To prevent vibration being transmitted to the buildings from either the track or street-supporting structures having bearing on the same bed rock as the building foundations, all footings for the street structures and the track slabs were constructed entirely independent of the building footings. Furthermore, all of the street structures themselves were separated from the buildings by air-gap expansion joints, a feature which was also incorporated between the main station building and its suburban unit. As a further precaution against vibration being transmitted to the buildings, all of the building column bases rest on anti-vibration pads about one inch thick, consisting of two lead sheets, ⅛ in. thick, two ⅜-in. layers of asbestos board, and a single sheet of No. 20-gage galvanized steel. Other precautions include the provision of clearance around building columns where they pass through station platforms, and physical separation between the buildings and the stairways joining them with the track level.



Electro-Pneumatic Switches and Position-Light Signals Are Employed Throughout the Terminal Area

The most severe ground water problem was encountered at the Broad Street Suburban station, the track level of which is under a considerable head of ground water. In solving this problem, the tracks within the terminal proper and west to a point between Twentieth and Twenty-First streets are laid on heavy concrete slabs, supported, in turn, on 18 in. of well-drained gravel. In the drainage system, terra-cotta pipe laterals lead to 12-in. cast iron pipes laid between or alongside the tracks, which carry the water to a sump near Eighteenth street, from which it is pumped into the city's storm water drainage system.

At the main station, the through tracks and platforms are supported on concrete piles carried down to bed rock. These piles were poured in place within steel shells driven by a steam hammer. This type of pile

was also used to support numerous miscellaneous structures immediately beneath and about the station, a total of more than 5,000 piles being used.

Electric Operation, Signaling and Interlocking

As an integral and essential part of these extensive improvements, the Pennsylvania has completely electrified its suburban lines out of the city, and is now completing the electrification of its main line between Wilmington, Del., and Washington, D. C., which will provide for continuous electric train operation between Washington and New York, and thus through the Philadelphia terminal area. Only brief reference will be made to the Philadelphia terminal electrification in this article since this, as well as the main-line electrification, was described in the *Railway Age* for February 25, 1933.

Electrified suburban transportation was initiated between Philadelphia and Paoli in 1915. This was extended to Chestnut Hill in 1918, to White Marsh in 1924, to West Chester and Wilmington in 1928, and to Trenton and Norristown in 1930, which includes all of the suburban service. Throughout the suburban area, trains are operated on 11,000-volt alternating current from an overhead contact system. The rolling stock consists entirely of multiple-unit equipment, made up of motor and trailer units.

Four New Interlocking Plants

Four new electro-pneumatic interlocking plants control all of the more important switches and signals throughout the terminal area, and replace 16 plants formerly required in this same territory. The new plants are known as "Penn" interlocking, located on the fourth floor of the new Pennsylvania station; the "Zoo" interlocking, located near the Zoological gardens at the north end of the terminal; the "Arsenal" interlocking, located at the south end of the terminal; and the "Broad" interlocking, which is located at the west end of the Broad Street Suburban station.

The "Broad" interlocking controls all switches and signals in the suburban track layout between the Broad Street Suburban station and a point about 700 ft. west of the suburban platforms of the West Philadelphia station, a distance of about 6,050 ft. It is equipped with a 135-lever machine, which operates 48 single switches, 8 double-slip switches and movable point frogs, 22 high signals, 51 one-arm dwarf signals and 18 two-arm dwarf signals. The "Zoo" interlocking, which includes a 227-lever machine, controls all switches to a point about 4,300 ft. to the north, and as far as Spring Garden street to the south, a distance of about 4,700 ft. The interlocking machine, when in full service, will operate 88 single switches, 14 double-slip switches and movable point frogs, 75 high signals and 52 one-arm dwarf signals.

The "Penn" interlocking, only a part of which is now in service, will eventually include a machine with approximately 259 operating levers, which will operate all switches and signals for through trains at the north and south ends of the main station tracks. The operating limits of this interlocking will be from a point 500 ft. north of Spring Garden street, south to South street; also around the station loop tracks and through the Thirty-second street tunnel. The "Arsenal" interlocking has a 99-lever frame, operating 47 switches and 53 signals, while provision has been made for the addition of 48 more levers for the control of additional switches and signals at a later date.

All of these interlockings are, in effect, combined as a unit system, so that the operation of trains throughout the entire terminal area is greatly simplified as compared with the former track arrangement handled by 16 interlockings. In the new arrangement, one man has a larger territory under his control, and, therefore, handles a greater amount of traffic with increased efficiency.

The tracks throughout the terminal are signaled so that movements are protected by the lock and block system, which makes it possible to use any track in either direction without train orders. The direction in which the lock and block system governs is indicated on the model boards in the respective interlocking rooms by means of a green spot light in an arrow. All of the signals throughout the terminal, including both high and dwarf types, are of the electric position-light type, and all of the switch machines are of the electro-pneumatic type.

Electric and Air Supplies

Electric power for use in the signal systems at the terminal is supplied by two 75-kv.-a. generators located

Below—The 135-Lever Machine of the "Broad" Interlocking Station, Located at the Broad Street Suburban Station

in the large steam heating and auxiliary power plant at West Philadelphia. These generators furnish 100-cycle current at 440 volts, which is transformed to 6,600 volts and then fed through suitable sectionalizing switches to the various transmission lines. In addition to this normal source of power, emergency connections are taken off at two points from the current supply for electric train operation.

Air for use in the signal systems is furnished by compressors in the steam heating and auxiliary power plant, and is given connection to the signal air lines through reducing valves and suitable cooling apparatus. The entire terminal area is provided with duplicate two-inch main air lines, one on each side of the different interlocking systems. These, in turn, are connected by 2-in. cross runs spaced not over 400 ft. apart, and frequently closer, to meet the conditions of the switch layouts.

The main air lines, generally placed above the ground on concrete pedestals, are of copper-bearing steel. However, where it was necessary to place the mains underground, extra heavy galvanized wrought iron pipe was used, as was also used for all of the cross runs.

Special Telephone System

In connection with the signal systems, a flexible telephone system has been provided throughout the entire terminal area, which permits of direct and prompt communication with the train directors at the different interlocking stations. In this system, telephones are located at all of the interlocked home-signal locations, each of these having direct connection with the interlocking station through which the corresponding signal is controlled. In addition to this system a complete telephone communicating system is also provided for the use of the signal maintainer's forces.

Steam Heating and Auxiliary Power Plant

Since the electric power requirements of the Philadelphia area involved in the Pennsylvania's terminal improvements are supplied by a public utility, there was no reason for the railroad to provide a primary power plant of its own, but there was every reason for modernizing and centralizing its steam generating facilities in the terminal area and for providing an auxiliary power supply for emergency lighting and minor power requirements. Prior to the recent improvements, the terminal area was served by five steam generating and three pumping and compressor plants. These have all been replaced by one modern plant located in West Philadelphia, about 1,000 ft. northwest of the new passenger station, which is not only capable of generating all of the steam and auxiliary power requirements of the railroad's present facilities in the terminal area, but which is so designed that its capacity can be doubled, tripled or quadrupled as desired to meet not only any enlarged requirements of the railroad in the future, but also the demands of any buildings, office or industrial, which will undoubtedly be constructed in later years immediately about the terminal area.

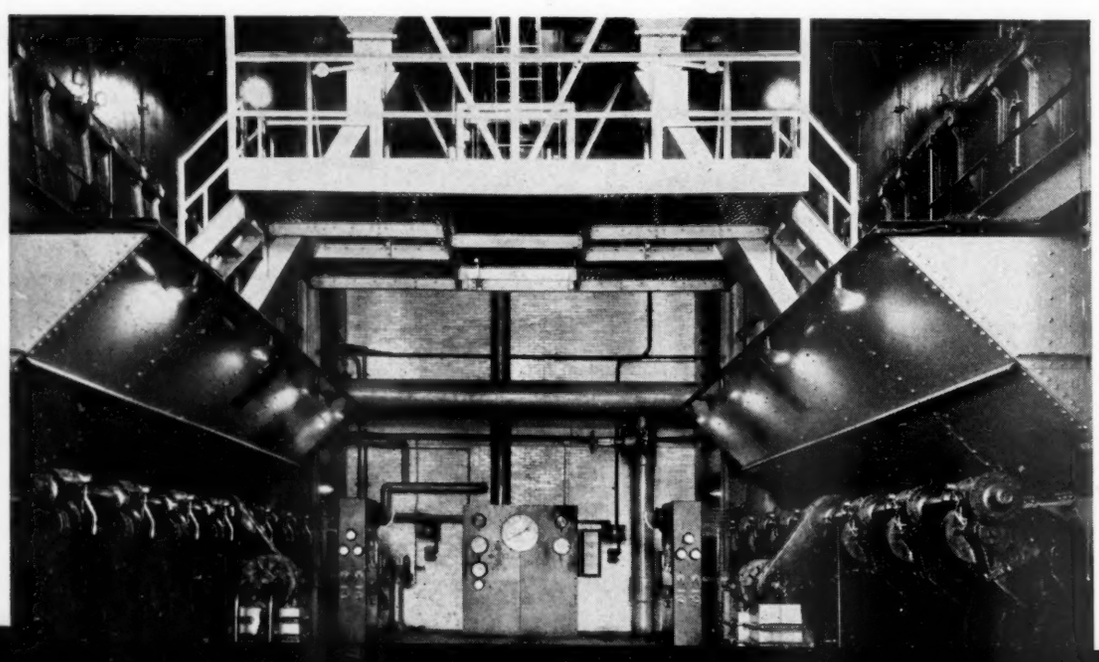
Plant Has a 425-Ft. Stack

The new plant, which was put in operation in November, 1929, consists essentially of a boiler house, 118 ft. by 100 ft., with a high smoke stack superimposed on top, and a four-story turbine wing, 85 ft. by 94 ft.; all faced with buff colored brick and limestone trim to harmonize with the general architectural appearance of the other terminal buildings. The entire plant is of steel frame construction, the steelwork being exposed in the boiler house, but entirely enclosed in the four-story turbine wing, the three upper floors of which are used largely for offices. The smoke stack, which rises to a height of 425 ft. above the ground, is of reinforced concrete construction, faced with brick, and is circular on the inside and octagonal on the outside.

As built, the plant provides two boilers of a four-boiler unit, the boilers being of the inclined straight-tube, cross-drum type, each with a heating surface of 26,230 sq. ft. and designed for operation up to 275 lb. per sq. in. gage pressure. Both boilers are equipped with motor-driven, forced-draft underfeed stokers.

Coal is delivered to the plant over a hopper track at the ground level, from which it is elevated by a skip hoist to the top of the building. After passing through a crusher it is delivered by a belt conveyor to a coal bunker over the firing aisle, from which it is distributed by weight larries to separate hoppers serving each stoker. Ashes at the plant are conveyed from the ash pits to a large concrete tank by a hydro-jet system, and from the tank are removed to railroad cars by a traveling crane equipped with a grab bucket.

The boiler water used consists of about 40 per cent condensate, pumped back to the plant, and 60 per cent city water, which is softened by a hot lime-soda process and stored at the plant in a 180,000-gal. concrete tank.



The Firing Floor of the Steam Heating and Auxiliary Power Plant, Showing the Coal Hoppers and Mechanical Stokers

All feed water is heated to about 212 deg. F. by exhaust steam from the turbo-generators.

Steam Distribution System

The main artery of steam distribution from the plant consists of two lines of 18-in. pipe, 4,700 ft. long, which extend in a southeasterly direction to the north end of the main passenger station, and thence across the Schuylkill river on the railroad's suburban track bridge to the Broad Street Suburban station and office building in the heart of the city. Up to the main station and the river, the distribution mains are housed in a heavily reinforced concrete tunnel, 11 ft. wide, and with a clear inside height of 15 ft. From the river east, over the bridge and its east viaduct approach, and through the suburban track subway to the Broad Street Suburban station, the mains are enclosed in a concrete pipe chamber.

All of the supply and return lines, with the exception of the principal 6-in. cast iron return line in the distribution tunnel, are of welded steel construction. These lines, with the exception of the 18-in. supply mains and certain of their more important exposed branches, are all enclosed with standard insulation coverings of 85 per cent magnesia, and either canvas or weatherproof paper, depending upon their location. The 18-in. mains and their principal exposed branches are covered with a double thickness of 2-in. magnesia.

The power equipment at the plants consists principally of two 1,750 kw. non-condensing turbo-generators, two motor-driven air compressors, each with capacity of 2,500 cu. ft. per min., and two 1,000-gal. per min. motor-driven fire pumps, in addition to several motor-generator sets, transformers and the necessary electrical control equipment.

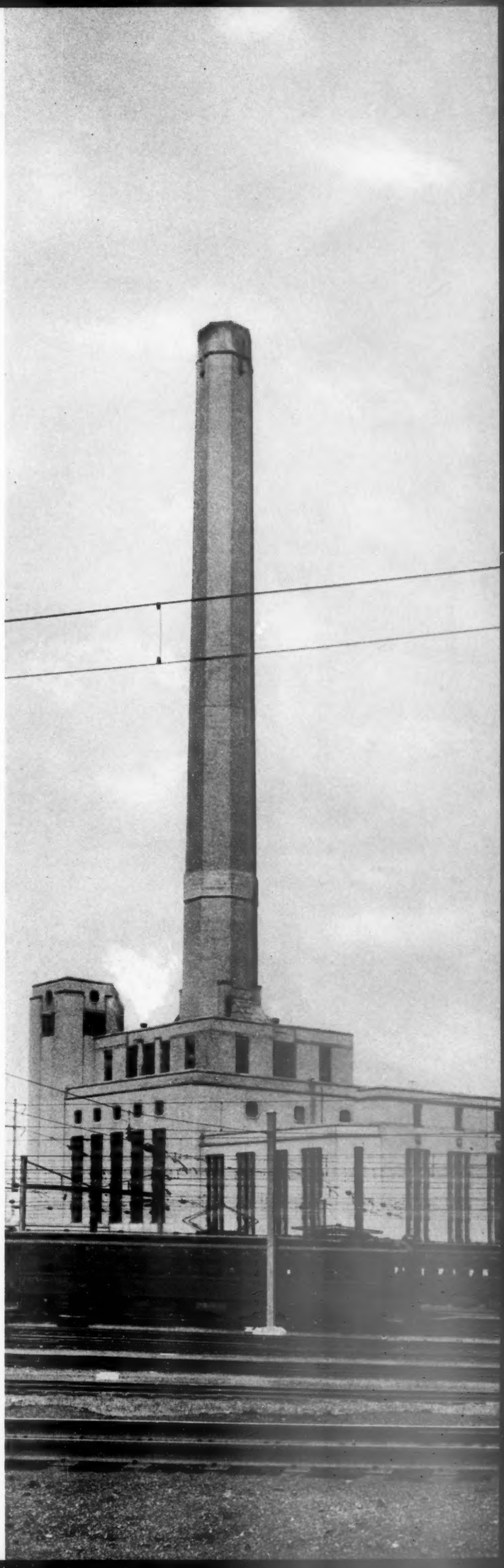
The transformer station at the plant delivers 2,300-volt, 3-phase, 60-cycle current for the operation of train signal equipment, the electric lighting requirements throughout the yards, emergency lighting in both the main passenger station and the Broad Street Suburban station, the operation of the plant compressors and fire pumps, and for car battery charging in the through coach yard. This 2,300-volt power is stepped down to 230 volts for the operation of miscellaneous equipment in the boiler house.

Service Buildings

Service buildings provided in conjunction with the new coach yards include a general yard service building, car repair sheds and a number of miscellaneous structures, including battery, oil and ice houses, yardmaster's offices and yard toilet buildings. The more important of these facilities are the general yard service building and the car repair facilities.

The former of these, which provides space for the wide range of services necessarily afforded by both a railroad and the Pullman Company at an important terminal yard, is a three-story structure, located immediately west of the south half of the through coach yard. This unit, which covers an area of approximately 14,000 sq. ft., and is served by supply tracks and driveways, is of reinforced concrete construction, faced with a buff colored brick and trimmed with limestone.

The basement and first and second floors of half of the



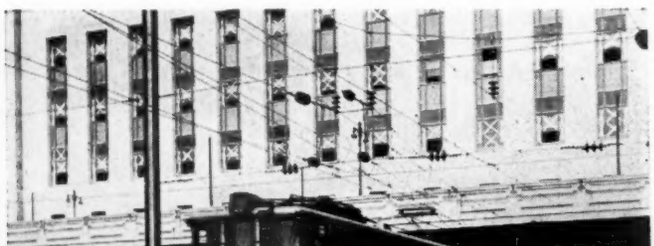
Right—The New Central Steam Heating and Auxiliary Power Plant Replaces Eight Old Plants in the Terminal Area

building are occupied principally by the Pullman Company for offices, locker, wash and dormitory rooms, and for linen handling and storage purposes. The remainder of the building is occupied by the railroad for such facilities as offices, rest and locker rooms for enginemen, and storage space for car repair materials.

The facilities at the terminal for making light emergency repairs to cars are located immediately north of the terminal heating plant and include essentially two shed-covered repair tracks, each with two 100-ft. inspection pits, and a machine shop, about 68 ft. long by 22 ft. wide. Both of these structures are constructed of corrugated metal sheets on a light steel framework.

New U. S. Mail Facilities Provided

In conjunction with the improvements of the railroad at Philadelphia, the Federal government is erecting a $10,000,000 city post office building over the tracks of the main passenger station, and the railroad is providing effective means and equipment directly adjacent for the expeditious handling of all mail between the post office and trains. On the basis of past experience, it is estimated that approximately 85,000 sacks of mail will be handled daily over the facilities being provided by the railroad.



An Electric Through Train for the South Emerging from Beneath the New $10,000,000 Federal Post Office Building Being Built Over the South End of the Station Tracks

The post office building, which is about 75 per cent completed, occupies the entire city block immediately south of the passenger station, approximately 460 ft. by 370 ft. in area, directly over the south end of the station track and platform layout. This building is five stories high and, to harmonize with the station, is entirely in limestone.

Special Facilities for U. S. Railroad Mail

The mail-handling facilities at the track level will be concentrated in an area west of the through passenger tracks, where a wide, two-level platform, 1,600 ft. long is being provided. This platform, which in its two levels will afford approximately 247,000 sq. ft. of area, will extend beneath the new post office building and will be served by both through and stub-end mail car tracks having a combined capacity for 78 cars. Sorting spaces will be located centrally on both levels and the mail will be handled between cars and the post office by means of belt conveyors, chutes, elevators and electric trucks.

For the quick and convenient movement into the post office of mail carried on regular through passenger trains, all of the low-level, through passenger platforms at the station will be given direct connection with the mail platform by means of belt conveyors which will extend transversely beneath the tracks in tunnels near the north and south ends of the station. Mail from trains will be deposited through trap doors in the platforms, directly on to the conveyors. At the mail platform, after sorting, it will be distributed by conveyors or trucks to the post office building or to waiting railway post office cars. Mail that is to go out on suburban trains will be sent back through the north conveyor tunnel to a sorting platform in the low-level baggage area at the east end of the suburban section. Here it will be placed on electric baggage trucks, which will be raised to the suburban platforms in electric baggage elevators.

In addition to the conveyors beneath the through tracks, all of the through passenger platforms, as mentioned previously, have direct trucking connection with the mail platform by means of ramps at each end, which lead to baggage tunnels crosswise beneath the tracks.

Special Organization Carried Out Work

Carrying out the improvements at Philadelphia, all of which was done under intensive train operation, presented innumerable difficulties to both the construction and operating forces. These difficulties were enlarged and prolonged on many occasions and in many respects by the depressed economic conditions of the last three or four years, which caused delay in carrying out or completing many operations. However, through the most careful planning and co-ordination of all effort, and close co-operation between all departments of the railroad and the engineering and construction forces, the many difficulties encountered were met and overcome successfully, and without the interruption of train schedules at any time.

The improvements at Philadelphia were under consideration for several years before the actual construction work was put under way in 1927. The early studies, which included general schematic plans, were carried out by the engineering department of the road under the immediate direction of E. B. Temple, assistant chief engineer, until in 1927, when a special organization under the executive direction of Elisha Lee, vice-president, was created to carry out the construction work. This organization, with Robert Farnham, chief engineer Philadelphia improvements, in charge of all engineering and construction, functioned as an independent unit until the death of Mr. Lee in August, 1933, at which time it was brought under the general direction of T. J. Skillman, chief engineer of the system.

The architects for the new through station and both of the new suburban stations were Graham, Anderson, Probst & White. The two major construction companies, which as engineers and general contractors have handled the principal structural work involved in the improvements, have been the United Engineers and Constructors, and Loucheim, Brown & MacDonough, formerly the Keystone State Corporation. The former of these companies has had charge of the construction of the main station with the track-level facilities directly beneath, the suburban section of the main station and the steam heating and auxiliary power plant, while the latter firm has had charge of the construction of the track-level facilities at the main station west of the west building line, including the mail handling facilities, and also of the construction of the Broad Street Suburban station and the suburban subway west to the Schuylkill river. The design for the electrification layout throughout the territory involved in the improvements was handled by Gibbs & Hill, consulting engineers.

Criticizes Outside Re-auditing of Freight Accounts

Co-ordinator's investigation finds railroads employed independent agency to "gyp" each other

PRACTICES of certain railroads in employing an independent accounting agency to re-audit interline accounts for the purpose of making recoveries for the benefit of clients of the agency, after the records had been checked, audited, and re-audited both by the carrier client and its connections, were severely criticized as representing "unethical business methods" in a memorandum by Director Wylie of the Interstate Commerce Commission's Bureau of Accounts transmitted by Co-ordinator Eastman on July 17 to the Railway Accounting Officers' Association, and by it to members of the association.

The occasion for the employment of the outside agency has now been removed by the adoption by the railroads of the new plan for simplifying the arrangements between railroads for the division of joint rates, which became effective with the accounts for the month of June. It was described in the *Railway* Age of June 16. However, Director Wylie's memorandum, dated March 7, before the plan was adopted, uses some strong language in characterizing the plan which had been in effect for some years contrasting it with "ordinary standards of honesty" and referring to "gouging practices" enabling certain railroads to "gyp" others.

The work of the re-auditing agency in the last ten years is said to have developed errors in the carriers' accounting amounting to millions of dollars but the memorandum points out that the results have been entirely one-sided in favor of the companies employing the agency.

Asserting that the record showed that the plan under which the re-audit company operated took recognition only of the amounts due its carrier clients, ignoring corrections in favor of other carriers; and resulted in the collection of large amounts which did not properly belong to the carrier client, Mr. Wylie commented on the example set the carriers' employees by such "gouging practices" and said that "the re-audit contracts under consideration are primarily based on the theory that the 'carrier client' will be enabled to 'gyp' the other carriers and after paying the audit company out of the spoils will still hold for itself substantial amounts of money which do not belong to it."

"The amazing thing in the record", he continued, "is that any accounting officer would attempt to justify the securing of benefits through such unethical business methods. If the human element be considered, the inevitable result will be that the carriers who do not enter into such contracts will, in order to protect themselves, adopt the practice to a greater or lesser extent of only reporting for correction errors in their own favor instead of performing the proper function of an auditor, which is to record a just and true record of the affairs accounted for."

Complexity of Divisional Arrangements Since Corrected

The memorandum is dated March 7 and is in the form of comments on a report of a special committee of the Railway Accounting Officers' Association in defense of the contracts with the National Railway Examiners, Incorporated, which had been the subject of a report by Mr. Wylie in December, 1933, in connection with an investigation undertaken by the co-ordinator. Mr. Eastman then took up with the accounting officers' association the question of the propriety and necessity of employing the outside agency, while requesting the Regional Co-ordinating Committees on April 4 to give attention to correcting the "excessive complexity and even uncertainty" of the divisional arrangements. Pointing out that the accounting officers had only a limited responsibility and that the major responsibility lay with the traffic officers, he suggested that the matter be handled by a central committee of the carriers for thorough study and aggressive action with a view to early and definite correction.

Prior to this communication, dated April 4, the advisory committee of the Association of Railway Executives had appointed a committee of 21 traffic executives and accounting officers to study the question, among others, and the co-ordinating committees jointly agreed to ask this committee for a report on the subject of simplified divisions. The report of the joint committee embodying the plan for simplified divisional bases was approved by the advisory committee and later by the Class I railroads as well as by the American Short Line Railroad Association, and put into effect by the railroads themselves. The plan has since been adopted also by several water carriers and the railway executives have extended an opportunity to do so to all inland and coastwise water carriers.

Mr. Wylie's Memorandum

Mr. Wylie's memorandum, replying to the various points made by the special committee, included the following:

> In accounting for freight revenue an obligation imposed upon the carriers by the law is that they shall collect no more and no less than the published tariff rates for their services.
>
> With respect to interline shipments there is a further requirement that the settlements between carriers shall be upon the basis of divisions of joint rates, fares and charges which are not "unjust, unreasonable, inequitable, preferential or prejudicial as between carriers parties thereto." Under the prevailing organizations of the railroads the duty of fixing these divisions is imposed upon their traffic forces. It is the duty of the accounting forces that the accounting for such revenue shall be in accordance with the divisions thus established. The duty for the initial accounting for such shipments is with the accounting forces of the delivering carriers. The original accounting thus effected is subject to audit by the other carriers at interest. Under the agreements for divisions of revenue the aim of each carrier in its re-audit work must be to secure to each carrier its correct proportion of the revenue. There is nothing to indicate in this record that the re-audit work accomplished with the carriers' own forces has not been with this object in view.
>
> This record and the letter of the president of the railway re-audit company shows that the examinations by that re-audit agency "takes place only after the records have been checked, audited, and re-audited both by the carrier client and its connections" and that the agency's "review is in reality a seventh

examination." The theory under which the examinations are made is also set forth in the same paragraph of the same document in the following terms:

"In my opinion the carrier has no obligation whatever to spend its money at this stage except in its own interest, leaving to the other roads which shared in the traffic the responsibility and the obligation to protect themselves."

There is a radical difference between the re-audit arrangements and the theory and purpose of certified accountant examination of the carriers' books cited as a parallel. The certified public accountant arrangements are primarily for the purpose of insuring the investors in railway companies of the correctness of the carrier's statement of its affairs, particular attention being directed to discovery of unrecorded liabilites and overstated assets whch would affect the solvency of the corporation.

Corrections in Favor of Others Ignored

It is apparently in view of the theory immediately hereinbefore set forth that the contracts for re-audit do not require recognition of amounts due to others by the "carrier client."

While a man may in justice to himself exact payment from his neighbors of all amounts due him, if he be an honest man he will exercise equal diligence in determining and paying the amounts due to them by himself.

The total of the interline accounts of all railroads after the final audit by their own forces contains the entire amount of interline revenue included in the audits which belong to them. After being thus audited there are probably amounts in the accounts of each carrier which should have been credited in the accounts of other carriers.

The committee finds that the re-audits under consideration developed amounts due "carrier clients" totaling $4,662,452.

Under the rule of general averages there would have been due from these "carrier clients" to other carriers an amount equal to their recoveries. It must, of course, be recognized that the relation between the amounts receivable and the amounts properly payable by the individual line would be at variance with the general average for all companies. In some cases had the "carrier client's" interline accounts been correctly stated the net amount of the corrections would have been in favor of other companies. In other cases, the proper statement of the "carrier client's" accounts would have shown the net amount receivable to have been somewhat less than the amount of the recovery and its take would have been correspondingly reduced.

The inevitable conclusion is that under the plan of re-audit which only took recognition of the amounts due the "carrier client" the collection of such amounts secured large amounts of money which did not properly belong to the "carrier client." One of the designations commonly applied to such practice is "gouging." If the examples of such gouging practice displayed to the carriers' employees is educational it is an education of the wrong kind.

Opinions may vary as to what may be properly designated as a test period. The record contains a letter from one carrier which indicates the test on its line has extended over a period of 11 years and 3 months,—rather an extended test period.

A letter of the National Railway Examiners, Incorporated, in the record indicates that that agency's recheck of interline accounts was actually the *seventh* check. The report, indicates a recovery of $4,662,452. This seems to clearly substantiate the correctness of the foregoing conclusions.

That the amount recovered was thus large, of course, was due to the fact that amounts due by the "carrier client" to other carriers were ignored.

Had the carriers met their obligations under their division of revenue arrangements in re-auditing the accounts by their own forces each carrier would have recognized both the amounts due to it and by it to others.

The benefits accruing from efficient auditing of each interline shipment by each interested carrier are reciprocal and were such audits effected the interline earnings of each carriers would be accounted with a close approach to accuracy.

Referring to the contention that it is probably impossible to attain absolute perfection in interline accounting until tariff structure and division sheets have been materially simplified, Mr. Wylie said:

No one familiar with the effetive division sheets will in any degree question the correctness of this conclusion. The complications of these division sheets are clearly "unreasonable." The obligation for correcting this evil, as stated supra, rests primarily with the carriers' traffic forces. The committee states that "the matter is now receiving consideration by railway executives and their accounting officers." Recently a committee of accounting officers met in Washington for the purpose of making specific recommendations to the executives. That they did not and could not agree upon the detailed recommendations to be made to their executives was a foregone conclusion.

The accounting officers should and undoubtedly have repeatedly called to the attention of their executives the unreasonableness of the interline divisions. In so doing they have met their obligations. The adage "let the shoemaker stick to his last" is here applicable. While the responsibility for the establishment of reasonable interline divisions rests with the traffic organizations of the carriers those familiar with the situation are well aware that these organizations have not and probably will not agree in the adoption of reasonable divisions. It is an involved subject and if these divisions are ever properly adjusted the work evidently must be done by an arbitrator. Whether this arbitration will be effected through your power as co-ordinator, by the commission's power under the interstate commerce act, or by an independent board of arbitrators is a matter for future determination.

The carriers' accounting organizations were created many years ago. On the other hand, the organization of the railway audit company has been created within approximately the last 10 years. The record indicates that the work of the re-audit agency has developed errors in the carriers' accounting amounting to millions of dollars, although as stated by the re-audit agency its work actually constituted the seventh handling of the accounts. The record clearly concedes the outstanding superiority of the work done by the agency. The volume of the errors discovered by the re-audit agency is a severe indictment of the competency of the accounting by the "carrier clients."

As to opportunity of carriers to acquaint themselves with existing conditions there can be no question as to the responsibility for this being done. There seems to be no evidence as to the necessity for the employment of the re-audit agency to revise the accounts for a term of years for the purpose of learning the existing conditions. Many of the carriers have undoubtedly been able to create efficient organizations for the revision of accounts for interline traffic. In case any carrier finds itself impotent to determine the existing conditions through its own organization there would seem to be no objection to the temporary employment of a re-audit agency under a contract providing that all classes of errors in interline accounting be developed. Such procedure would be entirely in line with ordinary standards of honesty between parties interested in joint projects. It is well recognized that unfair and unscrupulous practices between such parties are not only unjustified but are unduly expensive in the final analysis.

Mr. Eastman in his letter of July 17 said he had withheld Director Wylie's memorandum because W. E. Eppler, president of the National Railway Examiners, Incorporated, had asked to be heard. He said he found himself in general agreement with what Director Wylie had said but that "it is probably unnecessary to spend much further time on this matter of re-audits of interline accounts, for if the present plans for simplified divisional bases are made effective, as it seems that they will be, there will no longer be the occasion for such re-audits, such as has existed in the past."

The simplification plan recommended by the joint committee removes the occasion for disputes which have in the past occasioned so much expensive checking and auditing by providing for the stating of agreed rate divisions in percentages instead of by complicated formulas and where divisions have not been agreed upon or are in dispute, for the application of divisions previously agreed upon. After existing disputes are cleared up the accounts will always be on a current basis. A recent survey showed the existence of 20,000 disputed division cases involving 81 roads. The new plan is expected to provide many opportunities for the simplification of interline accounts and the elimination of complexities which have stood in the way of progress heretofore.

THE FIRST ANNUAL RIO GRANDE VALLEY FISHING RODEO will be held at Port Isabel, Tex., on August 8 to 12. It is being sponsored by local sportsmen in an effort to create interest in fishing and bring travelers to the Rio Grande valley. All expenses are being borne by the citizens and the chambers of commerce of the valley cities. There is no entry fee for participation. A total of 26 prizes will be awarded for points, the largest and heaviest fish and the best fish story.

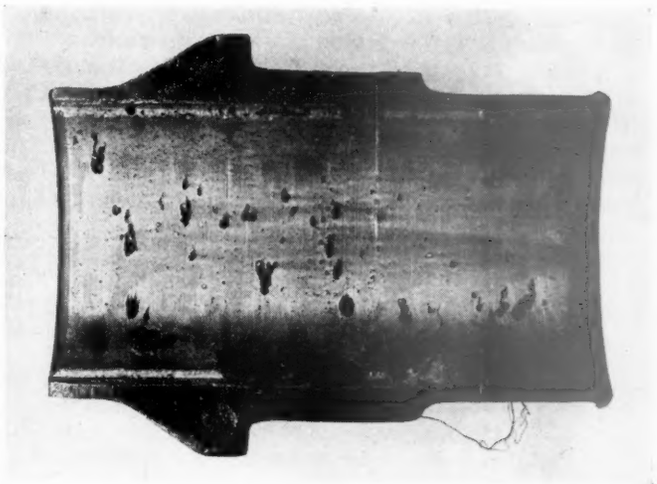
Car Journal Lubrication Problem

Improved oils developed by research and test give promise of reduction in lubrication failures

By W. F. Walsh* and A. C. Spencer, Jr.†

THE lubrication of car journals has been and still is one of the major problems in car operation despite the attention which has been given to it for years by railroad operating officers, car inspectors and others. Trains must be got over the road with the minimum of delays, fuel consumption must be kept down and maintenance costs must be watched. The large part that journal-box lubrication plays in car movements is quite generally recognized and the Mechanical Division of the A.R.A. has for a number of years had a committee on lubrication which has been studying this problem and has always done much to improve conditions.

Poor lubrication increases "oil drag" on the journals, adds to the work required by the locomotive, requires an increase in the amount of fuel burned, and either cuts down the number of cars that can be hauled in a train or increases the running time, not to count the time that may be lost because of hot boxes. Furthermore, wear on journals and brasses is increased with resulting additions to maintenance costs. To complicate the lubrication problem cars must be operated in hot weather in the south and in severely cold weather in the winter in the north, or at high elevations. Where roads pass over mountains or where they run north and south considerable temperature variations may be encountered within a short time.



Brass After a Waste Grab Showing Waste Imbedded in the Babbitt

Correct lubrication involves a number of factors: Use of good waste, proper waste reclamation, correct method of packing journal boxes, and possibly the most important of all the use of the right type of oil. A suitable car oil must lubricate satisfactorily, without hot boxes due either to waste grabs or oil film failures, in the face of widely different, and extremely severe weather and temperature conditions.

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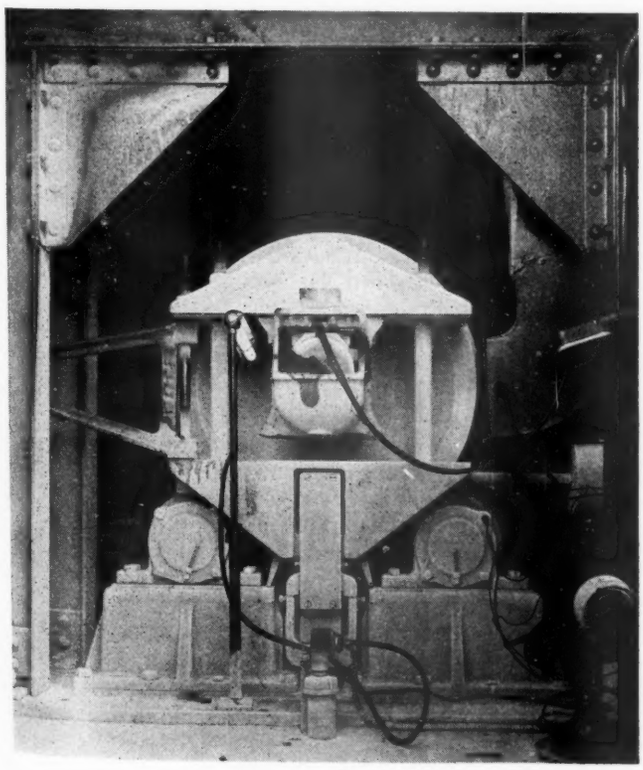


Lubrication Testing Machine Coated with Frost—A Waste Grab is Occurring

A Test Program Inaugurated

The Research Laboratories of the Standard Oil Development Company, a Standard Oil Company (New Jersey) subsidiary, has made over the past three years an intensive study of the car-oil problem. Preliminary to their investigations, the Laboratories had constructed a special car-oil testing machine.‡

Briefly, the test equipment consists of an A.R.A. standard car wheel and axle assembly with 5½-in. by 10-in. journals mounted on rolls and installed in a cork-insulated room. The temperature of this room may be held constant at any desired temperature between 40 deg. F. below zero and 130 deg. F. above. Each journal may be loaded to a total of 25,000 lb. through a system of levers and weights. The frictional resistance in the individual bearings, as well as the overall required drawbar pull, may be measured while the wheel assembly is driven by a 300-hp. electric dynamometer at any selected speed up to 85 m.p.h.

To simulate further actual operating conditions blowers are arranged to direct air against the journal boxes at velocities corresponding to the car speed. Resistance thermometers and thermocouples permit accurate recording of temperatures at strategic points. Adequate

‡ This machine was described in the February, 1932, Railway Mechanical Engineer, page 55.

facilities are provided for changing brasses and waste, and "frost-free" windows make possible observation of the performance of the testing machine at low temperatures.

A large number of tests under a wide range of speed and temperature conditions have been run on car oils of all viscosities suitable for railroad car service and from every available source. Particular attention has been paid to the performance of various types of oil under low temperatures corresponding to conditions encountered in winter operation (40 deg. F. above to 40 deg. F. below zero) for considerable trouble is encountered during this season due to waste grabs.

A waste grab results when the cold renders the oil on the journal so heavy and sticky that the waste adheres to it and is dragged up against the edge of the brass, interrupting the formation of an adequate oil film between the brass and the journal. This causes high friction to develop between the unlubricated rubbing

Effect of Viscosity Index on Oil Performance

	Summer Oil		Winter Oil		All-Year Oil	
	No. 1	No. 2	No. 1	No. 2	No. 1	No. 2
Saybolt universal, vis. at 210 deg. F.....	55	55	44.6	44.6	47	55
Saybolt universal, vis. at 100 deg. F.....	596	403	250	185	300	300
Viscosity index	0	75	0	75	21	115
Possible waste grab, deg. F.	30	12	8	−10	8	−7

parts and overheating follows, thus causing a hot box. Bits of waste may be carried up under the brass and become imbedded in the babbitt metal. This places an excessive load on the unaffected parts of the bearing and also leads to overheating. Replacement of the brass may then be necessary.

The Standard Oil Development Company's tests not only established the fact that the viscosity of the oil at low temperatures was the controlling factor in the occurence of waste grabs, but also that, depending on the grade of packing used, waste grab would occur when this viscosity was somewhere between 25,000 and 200,000 sec. Saybolt (extrapolated from actually measured viscosities on the A.S.T.M. temperature-viscosity chart).

Importance of Viscosity Index and the Pour Point

The A.R.A. specifications for car oils limit the viscosities at 210 and 100 deg. F., but do not specify viscosities at lower temperatures. Depending entirely upon their viscosity indices, then, oils which meet these specifications may or may not cause waste grabs in cold weather. The term "viscosity index" is an extremely important one in relation to car oils and is, briefly stated, a measure of the rate at which an oil thickens or becomes more viscous as the temperature drops, or thins out as the temperature increases.

In assigning values for "viscosity index" it is assumed that an oil, the viscosity of which changes with temperature variations in the same proportion as a typical Pennsylvania oil, has a viscosity index of 100, while an oil, the viscosity of which changes the same as a typical coastal oil, has a viscosity index of 0. In a like manner an oil, the viscosity of which changes in a proportion 75 per cent of the way between a coastal and a Pennsylvania oil, is considered to have a viscosity index of 75, and so on. An oil of high viscosity index does not become excessively thin when hot or thicken too much when cold.

Two oils may have the same viscosities at 210 deg. F., but if their viscosity indices differ, the one having the higher viscosity index is far more fluid (thinner) at, say, 0 deg. F., than the other, with a lower index. The use of high viscosity index oils, the viscosities of which do not reach the waste grab range until long after lower viscosity index oils have caused a grab, is a material aid in the solution to the waste-grab problem.

Contrary to the general opinion, the pour point of the oil does not affect waste grab, but it does appreciably influence feed of oil to the bearing at low temperatures. This was evidenced in the tests by the development of high frictional resistance between journal and brass when operating at temperatures below the pour point. The use of an oil having a low pour point is also essential to facilitate handling in cold weather.

Summer and Winter Oils

The oils which showed favorable low-temperature characteristics; i.e., freedom from waste grab at relatively low temperatures, were tested under severe summer conditions, consisting of long-time runs at high temperatures with speeds up to 70 m.p.h. and loads up to 25,000 lb. Average temperatures of bearings operating under summer conditions are between 165 and 185 deg. F., and it is, of course, in this temperature range that viscosities of summer car oils should be measured and compared.

In comparative tests of the higher viscosity index winter oils with the heavier oils meeting the A.R.A. summer car oil specifications, it was found that use of the winter oils usually resulted in bearing temperatures 10 to 15 deg. F. lower than with the summer oils, indicating a lower fluid friction or oil drag on the bearings. However, at slow speeds—below 10 m.p.h.—use of the heavier summer oils in hot weather is desirable to provide an adequate film of lubrication, for bearing failures were frequent when using some of the oils meeting the A.R.A. winter classification.

Summarizing, the Standard Oil Development Company's tests indicate that car oils should have relatively low viscosities at low operating temperatures to avoid waste-grab trouble, yet relatively high viscosities (between 75 and 85 sec.) at 175 deg. F.—average bearing temperature for high-speed trains in summer—to avoid bearing failures. In other words, oils having high viscosity indices (relatively slight change in body with changes in temperature) are to be preferred.

Doubt on this point will be removed by studying the accompanying table which indicates how oils meeting A.R.A. specifications may, depending on their viscosity indices, behave very differently at low temperatures. Raising the viscosity index about 75 points resulting in lowering, by about 18 deg. F., the temperature at which waste grab occurred.

High-Viscosity-Index Car Oils

The advantages of high-viscosity-index car oils were so clearly and so conclusively demonstrated by this research program that the Standard Oil Company of New Jersey has placed on the market the new ARACAR line of oils possessing this desirable property to a high degree.

The advantage of a high-viscosity-index car oil is that it markedly increases the range of temperature over which the oil will give satisfactory performance. By raising the viscosity index still further this range may be so increased as to eliminate the necessity for separate summer and winter oils. Such an oil—yet in the experimental stage—has been tested both on the Standard Oil Development Company's railroad test machine and in actual service on a railroad, under both summer and severe winter conditions. It has proved to be highly satisfactory in every way, and its availability on a commercial scale is assured in the not distant future.

C. & O. Discusses Public Relations

Employees hear informative addresses at annual session— Other roads challenged to adopt similar plan

THE Chesapeake & Ohio held its fourth annual public relations conference at its Greenbrier Hotel, White Sulphur Springs, W. Va., on July 21, with an attendance of approximately 200 officers and employees from all parts of the system. Public relations committees of employees are functioning in each county served by the company, the purpose of which is to interpret the policies of the company to the community and to inspire other employees to provide courteous and efficient service to the road's patrons. Those in attendance at the conference were delegates from these local public relations committees, each such group on the system being represented by one or more of its members.

One part of the program was educational, consisting of addresses from distinguished speakers on railroad problems, and the other consisted of a discussion by the delegates themselves of the various aspects of specific public relations questions. Principal speakers from without the railroad organization were Judge R. V. Fletcher, general counsel of the American Railway Association, who delivered the opening address, and Jacob Aronson, vice-president, New York Central, who was the speaker at the dinner held in the evening. John C. Dice, assistant to vice-president of the railway, presided at the conference.

Government Ownership a "Soap Box" Topic

Judge Fletcher in his address pointed out that, whereas government ownership was urged during and after the war because the railways were unable to supply sufficient transportation, it was now being put forward because of the condition of railway finances. He did not believe that many substantial business men favored government ownership, and said that the subject had been brought forward for serious discussion by Co-ordinator Eastman, who has raised this issue "from the level of the soap box to that of the lecture platform." He said that government ownership of the railroads would be the death knell of democracy and the forerunner of socialization of all industry.

The railroad situation, he continued, is not as serious as it is often pictured. He cited the recent successful private financing done by the New York Central, the Baltimore & Ohio and the Pennsylvania, to prove that the condition of some roads, at least, is far from desperate. The 337 millions lent the railways by the Reconstruction Finance Corporation he compared with the one billion advanced them by the government during the war, all except 38 millions of which have since been repaid.

The government, he added, is no Santa Claus, and has not lent money to the railroads except upon adequate security. The advances made by the P. W. A., he said, are not loans in the sense that the railroads sought the money, but rather were accepted at the insistence of the government as a part of the railroads' contribution to economic recovery.

Refinancing necessary during the next two years, he said, would total 414 millions, exclusive of government loans and equipment trust certificates, which would average only $2 per mile of line involved in the refinancing—surely not a staggering sum. Talk about general reorganization of the railways being necessary, he characterized as "bunk". There are two classes of roads—those in good shape financially and those in bad shape. The former are not threatened with disaster and it is ridiculous to include them in a general characterization which can be truly applied only to those roads with a topheavy financial structure, for which a perfectly good bankruptcy law is available. Lumping all roads together in a demand for financial reorganization, which is needed only by relatively few of them, is propaganda, having as its object the socialization of the railroads and of all industry.

False Propaganda of Railway Rivals

He suggested that if persons concerned about railroad finances wished to do something really helpful, they should devote their attention to the subsidized and unregulated competition to which the railways are subjected, and which is fostered by very intelligent and apparently well-financed propaganda by motor vehicle interests. As evidence of the activity of the latter, he drew attention to the false comparisons made repeatedly between the taxation of railways and commercial motor transport, in which the contributions made by the latter toward highway expenditures are lumped with their true taxes to give a misleading picture in comparison with railroad taxes. A true comparison, he asserted, would be between the six cents per dollar of gross revenue which truck operators pay for taxes and fees for highway use, and the 34 cents per dollar of gross revenues which the railways pay in taxes and in providing and maintaining their roadway. While the railroad outlook might not be as black as it had often been pictured, it could not be called promising as long as the railways were forced to compete with special privilege at the expense of the taxpayers. If the railways could have equality of taxation and regulation with their competitors, the regulation being administered by the same body, their troubles would be much less serious.

Legislators Impressed by "Folks Back Home"

Whether the railways' difficulties are to be surmounted or not, he concluded, depends largely upon railroad people and whether they will bring home to their communities the interest of the latter in equitable dealing with transportation. It is only through the "folks back home", who use their votes, that a legislator can be impressed. Legislators are not to be swayed by lobbyists. They are, quite properly, interested in holding their jobs and thus it is their constituents whose views largely govern their actions. He praised the work of the railroad employees and taxpayers leagues, and other organizations which are endeavoring to secure needed legislation by educating the voters rather than by lobbying. He recalled a time when railroad employees were often inclined to be indifferent to public opinion and likened them to Ishmael, "his hand shall be against every man, and every man's hand against him". He said that that

day had long passed and that the end of the railways' difficulties depended largely upon the effectiveness of the public relations work done by members of his audience and others like them.

Four Varieties of "Boloney"

L. C. Probert, vice-president of the railroad, spoke on the threat of government ownership to railroad employees. A government, he said, which can debase the dollar and then make it illegal to possess one "can very easily step in and take over the railroads if someone does not step out and stop them". He cited four arguments which have been advanced in behalf of government ownership. The first was that the railways are over-capitalized and their securities full of "water". This contention, which he called "Boloney No. 1", he disproved by citing findings of the Interstate Commerce Commission. "Boloney No. 2" was the contention that funded debt is excessive. "Would a man who had a $4,000 mortgage on a $10,000 house have excessive indebtedness?" he asked. "Boloney No. 3", the claim that the railroads cannot earn fixed charges, he answered by showing that many of them are earning these charges. "Boloney No. 4", completing "the whole meat market", was the assertion that the railways cannot finance themselves, which he disproved by the recent success of the Baltimore & Ohio, the Pennsylvania, and the New York Central in the private capital market.

He quoted totals of railway operating statistics and asked what expenses railway critics would reduce. On the Chesapeake & Ohio, he said official salaries were only four per cent of operating expenses, so no substantial savings could be looked for in that quarter. He contrasted the enormous savings effected by railway managements with the great rise in costs incident to government regulation—mentioning the 200 millions spent on valuation, the rise in operating cost of the Interstate Commerce Commission from less than $100,000 at its inception, to over $7,000,000 annually, and the expense involved in answering the Co-ordinator's questionnaires, which are measured "not by the cubic feet, but by the cubic yard." The railways are owned by the "man in the street", he said, (giving figures of the widespread holdings of railway stock by small investors). If you redistribute railroad property, you "redistribute" the man in the street. It is all right for a dog to bury a bone or for a squirrel to hide a nut, but it is considered unrighteous for a man to save a dollar.

Promotion Only by Consent of Politicians

He mentioned the "orgy" of spending which would follow federal control of the railroads and said that it would be administered by appointed bureaucrats whom no one knows and who could not be elected to the position of dog catcher. What would become of railroad jobs under such a dispensation, he asked, and, by way of answer, quoted from a letter received by an applicant for a government job, directing him to secure the certification of political leaders. He asked his audience whether it would like to have to secure such endorsement as a pre-requisite to employment or promotion.

The taxes now paid by the railways which would be lost to state and local governments if the federal government owned the railways were cited as proof that the change would mean that the other taxpayers would have to make up a tremendous loss in revenue, including 140 millions which the railways now pay each year for the support of the schools. He told of Canada's costly experiment with government ownership, and added that all the satisfaction the Dominion's citizens get when they question the venture is to hear each political party blame the other for it.

Fortunately, he said in conclusion, railroad employees and the public have a powerful protection against the danger which threatens them in the lead pencil with which they mark their ballots on election day. If they will use this weapon, they can avoid the fate which otherwise awaits them. A government which cannot keep "out of the red" itself can hold out little hope as a successful operator of the railways; nor can a government which destroys food while people are starving convince the public of its ability to use judgment in business matters.

At the conclusion of Mr. Probert's address, Judge Fletcher arose to congratulate him and to make known the fact that the reduction in the salaries of railway officers, forced upon them by the Co-ordinator and the Reconstruction Finance Corporation last year, in the glare of intense publicity, had effected a saving of 0.009 of one per cent in railway operating revenues.

Qualifications of a Successful Freight Salesman

W. C. Hull, assistant vice-president, traffic, of the railway, spoke on the work of traffic solicitation. He outlined the qualifications for successful railroad freight traffic salesmanship as follows:

1. Knowledge of the service the railroad offers—its schedules, facilities, terminals, etc.

2. Ability to discuss intelligently the economic value of railway service in comparison with that offered by competitors.

3. Intimate knowledge of the problems of the customer, in order to be able to help him solve some of them.

4. Full acquaintance with all special service features the railway has to offer—passing reports, collection and delivery service, container and truck body tariffs, reconsignment and transit privileges, schedules and connections; a general knowledge of rates and a working knowledge of the classifications.

5. Avoid guessing at answers to shippers' questions—it is better to admit ignorance and search out the facts than to risk giving an incorrect answer.

6. Do not overlook the regular customer in the concern about new business; keep the regular patron "sold".

7. Be neat in appearance and tactful; and do not waste the patron's time by prolonging the call upon him.

Mr. Hull stressed the importance of specialists in solicitation for certain important classes of traffic, such as coal and livestock. He advocated the advertisement of railway freight services and said that the Chesapeake & Ohio had been a leader in this innovation. He called attention to the advantages which truck transportation has over the railroads—such as collection and delivery service and handling freight in smaller units—and said that the railroads can meet and surpass these advantages in many cases by offering collection and delivery service and all-commodity rates, by simplifying packing requirements and by authorizing the Railway Express Agency to publish the railroad l.c.l. tariffs and handle package freight in the same manner as express shipments. He urged also that operating officers make a practice of calling upon shippers in company with traffic representatives. Employees, he said, should report all failures to provide perfect service to patrons, so that conditions permitting such failures may be corrected. The duties of the traffic solicitor, he said, go far beyond the mere "begging a carload of freight for our railroad" and should embrace

a militant salesmanship for the railroads, as opposed to other forms of transportation.

Other speakers at the morning, or educational, session were F. J. Friel, agent, who outlined the growth of the railway's public relations work over the last eleven years, and this was elaborated upon later in the day by W. J. Harahan, senior vice-president; Henry Bannon, division counsel, who discussed the railroads' tax burdens; S. H. Pulliam, trainmaster, whose address was on the cultivation of patrons' good will; and Tillie Hanshaw, assistant timekeeper, who described the work of women employees in public relations activities. Mr. Bannon, in his address, set forth his opposition to the extravagant expenditures now being made by the government, declaring that no one ever "spent himself rich". He said that highway construction should be stopped because we cannot afford to continue it, and that the costs of maintaining existing roads should be borne in larger measure by commercial vehicles, which do the most damage to them. He called attention to the fact that in one county in Ohio the Norfolk & Western and the Chesapeake & Ohio pay one-third of all taxes, and that in many other counties in the country the proportion of railroad to total taxation was even greater.

The afternoon session was given over to the discussion of specific public relations problems by the delegates themselves. Some of the topics included in this symposium were: Whether public relations committees should meet at regular intervals; the railroad subjects in which the public is most interested; the importance of courtesy; the handling of legislative work. Speakers from the floor made a number of pointed observations. One advocated the enlargement of the public relations committee to include virtually all employees, the present committees to serve the enlarged committees as an executive. The subjects of greatest interest to the public were declared to be the improvement in the speed of railway service and the threat of government ownership. An agent reported that the short period of credit allowed to shippers and strict demurrage rules were the principal sources of friction with the public. Another pleaded for simplification of tariffs to reduce undercharges, since the attempts to collect from patrons sums due because of undercharges often lead to unpleasantness.

Fitzpatrick Challenges Other Railroads

The proceedings of the day were summarized in an address by J. M. Fitzgerald, vice-chairman, Committee on Public Relations of the Eastern Railroads, and by H. Fitzpatrick, vice-president and general counsel of the Chesapeake & Ohio. The convention voted unanimously to send a telegram of greeting to J. J. Bernet, president of the company, who was unable to be present at the conference. Mr. Fitzpatrick struck a serious and provocative note in his remarks. The day's discussion had been enlightening, but what were those present going to do with the information they had received? Were they going contentedly home with it, or were they going to put it to use to defend their jobs and the interests of the railways and the public? The trend of public policies as they affect the railways is serious, and will continue to be so unless railroad employees take vigorous action in the premises Then, addressing himself to visiting officers of other railways who were present, Mr. Fitzpatrick asked them what they proposed to do on their railroads. The Chesapeake & Ohio and its employees are making a definite organized effort to meet the realities of the present railway situation. If other railways and their employees would put forth a similar effort, public policies toward the railways and their employees would undergo a profound change for the better.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended July 14 totaled 602,778 cars, an increase of 82,971 cars as compared with the week before, which included the July 4 holiday, but a decrease of 41,794 cars as compared with the week ended June 30. It was also a reduction of 50,883 cars as compared with the corresponding week of 1933, but an increase of 99,017 cars as compared with 1932. Loading of ore and live stock showed increases as compared both with the week before and with the corresponding week of last year, but all other commodity classifications showed reductions as compared with last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, July 14, 1934

Districts	1934	1933	1932
Eastern	130,377	147,002	110,870
Allegheny	115,671	133,125	95,605
Pocahontas	39,838	47,296	29,895
Southern	79,359	89,354	71,043
Northwestern	90,930	91,752	61,281
Central Western	97,288	93,529	89,985
Southwestern	49,315	51,603	45,082
Total Western Districts	237,533	236,884	196,348
Total All Roads	602,778	653,661	503,761
Commodities			
Grain and Grain Products	43,068	51,531	42,227
Live Stock	20,722	15,584	16,618
Coal	94,580	113,332	70,214
Coke	4,416	6,366	2,579
Forest Products	21,911	28,591	14,930
Ore	32,712	25,524	6,539
Merchandise, L.C.L.	157,798	171,239	166,935
Miscellaneous	227,571	241,494	183,719
July 14	602,778	653,661	503,761
July 7	519,807	543,510	415,928
June 30	644,572	641,730	488,281
June 23	621,872	609,627	498,993
June 16	617,649	592,759	518,398
Cumulative total, 28 weeks	16,522,916	14,541,471	15,027,509

The freight car surplus for the last half of June averaged 337,606 cars, a decrease of 11,298 cars as compared with the first half of the month. The total included 199,785 box cars, 93,684 coal cars, 22,588 stock cars, and 9,430 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended July 14 totaled 45,389, an increase of 5,442 cars over the previous week, which contained a holiday, and 5,546 cars over the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
July 14, 1934	45,389	20,033
July 7, 1934	39,947	18,785
June 30, 1934	46,645	21,056
July 15, 1933	39,843	19,471
Cumulative Totals for Canada:		
July 14, 1934	1,179,789	640,908
July 15, 1933	980,992	498,488
July 16, 1932	1,153,634	558,620

Milwaukee Train Averages 91.1 M. P. H. for 70 Miles

SMASHING the world's record for sustained steam train speed, the regular 9 a.m. Milwaukee Express of the Chicago, Milwaukee, St. Paul & Pacific made the 85-mile run from Chicago to Milwaukee, Wis., in 67 min. 35 sec. on Friday, July 20. While the average speed was 75.5 m.p.h., the train reached a maximum speed of 103 m.p.h. between Oakwood and Lake, a distance of 5 miles; from Mayfair to Lake, 69.9 miles, it averaged 91.1 m.p.h., and for the 31 miles between Russell and Lake, 93 m.p.h.

The record run was made by a standard scheduled train, one of the fleet which recently inaugurated a 90-min. service between Chicago and Milwaukee, and by the engine crew which handles the train each day. The train consisted of a baggage car, 68.6 tons; a parlor car, 83.1 tons; two coaches, 75.8 and 72.9 tons; and a business car, 88.1 tons; a total train weight of 388.5 tons. The locomotive, a 4-6-4 type with 26-in. by 28-in. cylinders and a tractive force of 45,882 lb., weighed 653,650 lb. with its tender. The run was made over relatively level track with few curves. Curves of 1 deg. were negotiated at 102 m.p.h. with little discomfort in the rear car.

The train left Chicago at 9 a. m. and arrived in Milwaukee at 10:07:35 a.m., the run in detail being as follows:

Miles from Chicago	Station	Passing Time
0.0	Chicago	9:00
9.0	Mayfair	9:12
20.2	Techny	9:21
32.3	Rondout	9:29
42.9	Wadsworth	9:35
51.6	Ranney	9:41
61.8	Sturtwart	9:48
69.4	Celedonia	9:53
77.9	Lake	9:58
85.0	Milwaukee	10:07

In America, the fastest sustained steam locomotive speed was made by the Lehigh Valley in 1897, when one of its trains ran 44 miles at the rate of 80 m.p.h., and in 1905 when a Pennsylvania train of three cars ran 50 miles at 79 m.p.h. On the Great Western, of England a run was made from Swindon to Paddington (London), 77¼ miles, at the rate of 81.6 m.p.h. on June 6, 1932.

The Milwaukee train was equipped with Timken roller bearings on all cars and on the tender and trailer trucks of the locomotive.

Railroads May Refuse Private Refrigerator Cars

WASHINGTON, D. C.

PROPOSALS by the railroads to amend the perishable freight tariff, I. C. C. No. 5, in such a way that the carriers will hold themselves out and reserve to themselves the right to furnish exclusively all refrigerator cars ordered by shippers other than meat packers were approved by the Interstate Commerce Commission, in a report on "Use of Privately Owned Refrigerator Cars" made public on July 21, but with a condition that the amended rule should not contain the proposed exception in favor of meat-packing companies. The purpose of the amendments is to prevent the practice which has been growing in recent years by which private and railroad-controlled car lines have been bidding against each other to place cars in the exclusive service of shippers at reduced rentals, thus displacing the use of railroad-owned refrigerator cars, and enabling the shippers to profit from the mileage earnings of the cars. Such allowances, the commission finds, are unlawful rebates and concessions.

Under the modification of the proposal required by the commission, it says, "the duty would then be upon respondents to furnish suitable cars to transport the products of such meat-packing companies. Since respondents do not have cars suitable to transport fresh meats and packing house products, it will behoove them to make suitable arrangements to secure cars which will serve that purpose. The testimony shows that under present conditions the carriers are not equipped to meet their legal obligation to furnish the packers with suitable cars, but this does not mean that they cannot make suitable arrangements for the use of cars to take care of the packers' needs."

The operation of the proposed amendments had been suspended by the commission pending investigation until January 1, 1934, and was then voluntarily suspended. The proposal was advanced after several efforts to do away with the practice of leasing cars on the ground that it promoted uneconomical car handling and methods. The burden of justifying the proposed rules was borne at the hearings by the American Railway Association, with M. J. Gormley, its president, as the principal witness. The amendments were opposed by 23 roads, mostly operating in western territory, and by various shippers and private car lines, who contended that the exception as to meat cars was discriminatory because dealers in dairy products are in direct competition with packers in the buying and selling of such products.

Under the amendments proposed shippers must arrange for their refrigerator car supply through the carrier or carriers serving them; carriers will not accept in interchange empty refrigerator cars intended for loading on their lines unless specifically arranged for by them; cars of private car lines will not be furnished by carriers for loading on their lines except upon certification that no gift, gratuity, or part of the earnings from mileage payments, or otherwise, will be paid directly or indirectly to shippers, their agents, or employees. Advertisements of shippers or products are prohibited on newly constructed or repainted refrigerator cars, and effective January 1, 1937, no refrigerator cars bearing advertisements of any shipper, consignee, or product will be accepted in interchange or handled locally on any railroad.

The position taken by the A.R.A. was that as a matter of self-protection the railroads must take steps to stop private-car owners from forcing upon them through leasing, renting, and assigning private refrigerator cars to shippers, which displace cars the railroads have provided for the business of such shippers, a practice which involves payment of huge sums for mileage, and unnecessary empty hauls and terminal services.

"The railroad-controlled lines," the report says, "generally did not indulge in the practice of leasing, renting, or assigning cars to shippers until about 1928. They had entered into contracts with various railroads under which they were obligated to furnish refrigerator cars in sufficient number to take care of the needs of all shippers served by such railroads. Certain private-car lines also maintained similar contractural relations with other railroads. Other private-car lines were leasing, renting, or assigning cars to shippers served by such railroads, and the car lines which were under contracts to supply all necessary cars to shippers served by such railroads, as a

(Continued on page 123)

Motor Transport Section

Louisville Freight Station Shows Increases Since New Plan Has Been Effective

Storedoor Service Increases Traffic

Louisville & Nashville regains lost business with pick-up and delivery service

AFTER somewhat more than a year's operation of pick-up and delivery service, in connection with other roads in the Southeast, Louisville & Nashville traffic officers are convinced of the efficiency of the plan in recovering traffic for the rails. Moreover, the regaining of the lost traffic has an excellent effect on the morale of the employees, who, with the new service as a talking point, are soliciting l.c.l. business with renewed vigor.

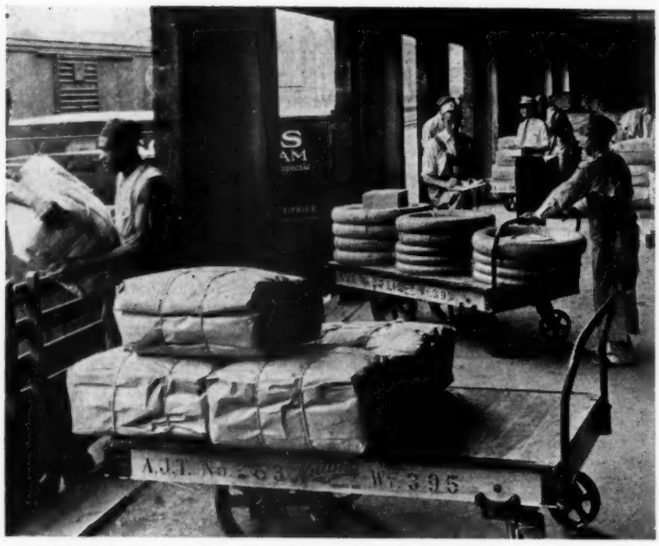
The figures bear out the statement of traffic officers that new business amounting to some 10,000,000 lb. a month is being won back to the rails. In March, 1934, for example, just a year after the service started, less than carload merchandise forwarded from pick-up and delivery stations was 73,511,257 lb., or an increase of 25.6 per cent over the same month of the previous year. The total of carload merchandise received at these stations was 78,741,458 lb., or an increase of 27 per cent over March, 1933.

500 Stations Covered

The pick-up and delivery service in the Southeast was inaugurated on March 15, 1933, by the Louisville & Nashville, in conjunction with seven other railroads, namely, the Nashville, Chattanooga & St. Louis; the Gulf, Mobile & Northern; the New Orleans Great Northern; the Tennessee, Alabama & Georgia; the Flemingsburg & Northern; the Carrollton; and the Fernwood, Columbia & Gulf. The service as originally planned covered nearly 500 stations, and, as amended, now covers more than 500 stations in the Southeast, as well as along the line of the L. & N. between Louisville and St. Louis.

The original plan limited the free pick-up and delivery service "between points where the first class rate is 108 cents or less per 100 lb.", which, in effect, meant between points not more than about 230 miles distant from each other. A few months later, the demand for the service, together with a close study of the situation, caused this distance limit to be extended to include points approximately 360 miles distant from each other. The service is also provided between stations that exceed this distance limit, but, in such cases, an additional charge of ten cents per 100 lb. is made for the storedoor pick-up or delivery, or both. "One-end" service is also provided, that is, either pick-up or delivery on traffic moving between a P & D station and a point on some other line within the Southern territory but not a party to the

Delivering Storedoor Shipments at Birmingham



Pick-Up and Delivery Shipments at Atlanta, Ga., Freight House

tariff. This latter arrangement has also been extended to include shipments moving to or from points, one of which is not in Southern territory.

In addition to the network of local trucking contracts covering the territory, the L. & N. provides shippers or consignees wishing to perform the service for themselves with an allowance of five cents per 100 lb. on shipments that would be entitled to the free service. Surveys made at some of the more important stations indicate that the L. & N. contract draymen handle 60 per cent of shipments delivered under the new arrangement, and about 25 per cent of the pick-up service.

At the inception of the plan, certain restrictions as to weights and sizes of packages and as to the commodities to be handled under the service were made, but, with the steadily increasing desire on the part of all shippers to utilize the storedoor features, these rules have been considerably modified, so that there are now but few restrictions remaining as to the type of less than carload freight that comes under the tariff covering the movements.

Agents React Favorably

The plan began to demonstrate its merit as soon as it was put into effect, and the additional clerical work involved, as a result of much interchange of information and experience between the local agents, proved much less burdensome than might have been anticipated. When the plan had been in operation some six months, 21 of the agents at the larger freight stations were asked to give their opinion of the plan, and a consolidated statement of their views was prepared, as follows:

"Except at a small percentage of stations, where local conditions have hindered it, the service has been a decided help to us in regaining much of the business that we had lost to other forms of transportation. With the continued co-operation of employees in the matters of speedy deliveries, courteous treatment of the patrons, and acquainting friends with its advantages, the unqualified success of the P. & D. service is assured.

"Shippers and receivers of freight are generally well pleased with the service and frequently express to us their approval and appreciation of it. They would like to see it more widely extended.

"The inauguration of the service has had a decidedly good effect on the morale of the employees. They feel that the company has taken a progressive step in the right direction and are greatly encouraged. Accepting the P. & D. plan as a lever, they are redoubling their efforts toward solicitation."

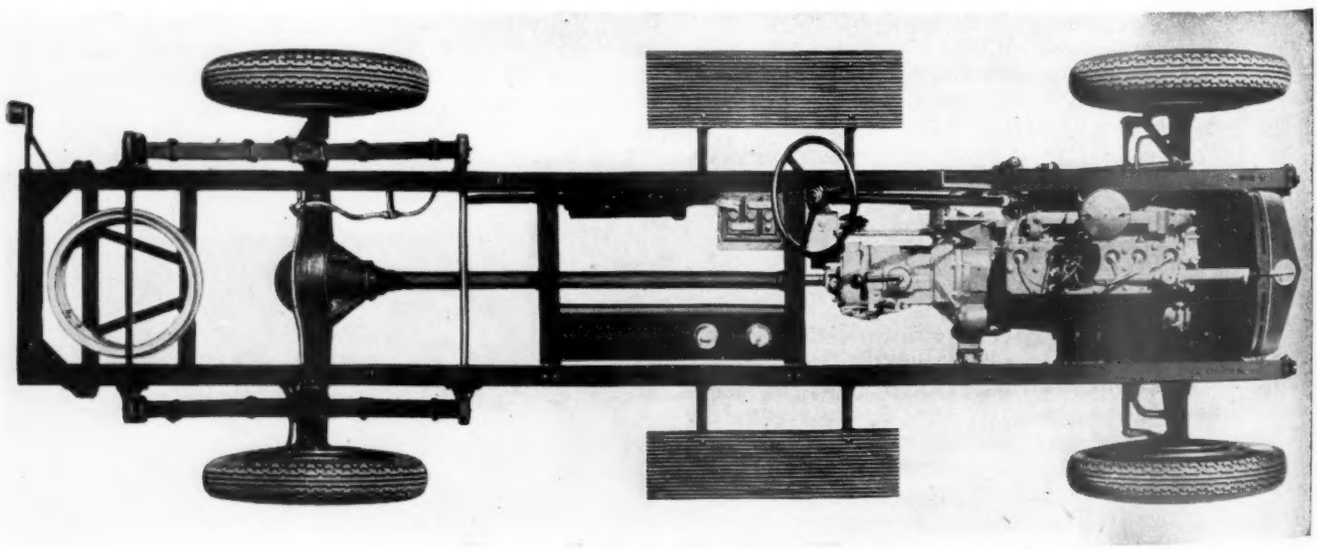
It was found also that the contract draymen were valuable assets as solicitation forces in their local communities.

New Stewart Truck

THE Stewart Motor Corporation, Buffalo, N. Y., has started production of a new 1½ ton chassis. The new truck features a six cylinder motor, four wheel hydraulic brakes, four speed transmission and a full floating rear axle.

This chassis is supplied in wheel-base lengths of 134, 145, 160 and 176 in., thus permitting correct load distribution for bodies as long as 12 ft. The six-cylinder motor features a removable block, side mounted water pump and steel valve inserts. The carburetor is a Stromberg, with down draft manifold.

The new model is also equipped with Spicer roller bearing universal joints and shafts, and Ross roller bearing steering gear.



New Stewart 1½-Ton Chassis

Efficient Utilization of Coaches

Boston & Maine Transportation Company produces more miles with fewer units

DURING the year 1929, with 98 coaches in service, the Boston & Maine Transportation Company, operated 2,138,962 coach miles. In 1933, with only 83 coaches in service, this company operated 2,433,969 coach miles, an increase of 295,007 miles, with 15 fewer coaches. In other words, 13.8 per cent more miles were operated, with 15.3 per cent fewer transportation units. Such factors, as the improvement in highways in the New England territory served, entered into the production of this increased mileage, of course, but the principal factors involved were those of efficient management, of intelligent supervision and of taking advantage of every opportunity tending toward more efficient utilization of the motor coaches available.

Miles Per Day Increased

As a result of more efficient operation, the miles per coach per day were increased materially, as it was necessary to do to produce the showing indicated in the first paragraph. In 1929, the average miles per coach per day were 61. This was increased to 64 in 1930, receded to 62 in 1931, and then rose to 64 in 1932 and 78 in 1933. For the first six months of 1934, this index stood at 83 miles per coach per day, and, in considering this figure, it should be remembered that, with the summer season by far the best, insofar as the utilization of coaches is concerned, it may well be raised to 90 miles per coach per day before the summer season is completed.

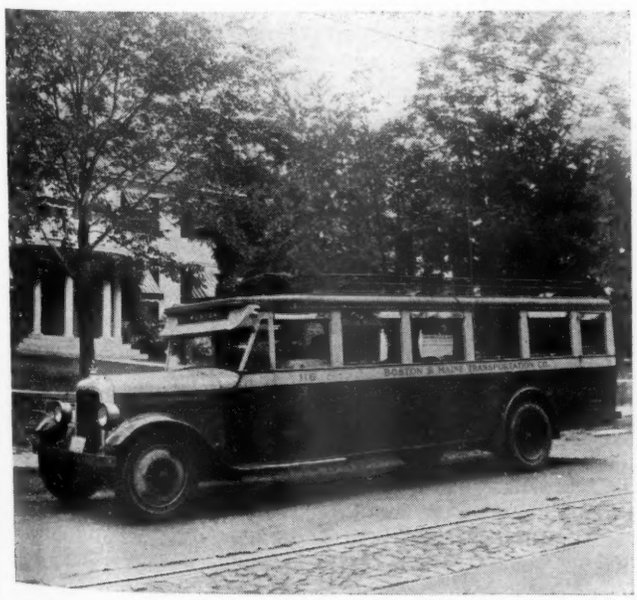
To western operators, these figures on miles per coach per day seem low, but, in view of the numerous short-haul routes which the Boston & Maine Transportation Company operates, they are excellent. For example, the maximum possible mileage obtainable anywhere on routes of the B. & M. T. Company, taking into consideration traffic demand, is 320 miles per day, and only two coaches could possibly make this figure, however favorable the operating conditions might be, and, in the particular case in question, they are distinctly unfavorable. The next highest possible mileage obtainable is 240 miles per coach per day. From there, the possibilities drop to 170 miles per coach per day, and rapidly descend further to such runs as the Wakefield-Lynnfield (Mass.) runs, where the possibly mileage remains static and unchangeable at 18 during the summer, and 36 in winter, when extra trips are made handling principally school children. Included in the general figures also are runs made by coaches in two municipalities—Concord, N. H., and Portsmouth—replacing street car service, and where also the mileage is limited, and schedules must be arranged to serve the traffic to be handled rather than with the idea of obtaining miles per coach per day.

One of the New Coaches Purchased by the Boston & Maine Transportation Within the Past Year

Motor Coach Routes Operated by the Boston & Maine Transportation Co.

Bus Route	Mileage	Bus Route	Mileage
Portsmouth City Lines	..	Boston-Keene	85
York Beach	17	Gardner-Greenfield	45
Boston-Portland	110	Winchendon-Peterboro	15
Concord-Newport	45	Nashua-Worcester	47
Boston-Concord	80	Troy-Bennington	30
Franklin-Bristol	14	Greenfield-East Deerfield	2
Wakefield-Lynnfield	3	*Boston-Albany	190
Dover-Durham	6	*Boston-White Mountains	210
Exeter-Hampton	10	Portland-Biddeford	20
Nashua-Wilton	17	Ayer-Townsend	14
Northampton-Battleboro	40	Concord City Lines	..
Lowell-Worcester	45		

* Operated during summer season only.



One of the Older Type Coaches in Use on the Boston & Maine Transportation Company's Routes

A statement, showing the routes now operated by the Boston & Maine Transportation Company, with the mileage between terminals, accompanies this article.

Operating Methods Scrutinized

The Boston & Maine Transportation Company, like many railroad-owned highway subsidiaries, began opera-

tions very largely by establishing runs to replace unprofitable train service, and many such runs are still in existence. Within the past few years, however, the management has been successful in turning over to independent operators some of these runs, particularly at isolated places where it was necessary to keep a staff for the purpose of maintaining one or two coaches.

At the same time, a determined effort was made to extend other routes, or increase the number of scheduled trips over them, in order to obtain the maximum utilization of equipment, although, of course, traffic conditions and potentialities were taken into consideration as a prime requisite before such extensions and schedule improvements were made. Similarly, along the lines of extending runs, a co-operative arrangement was entered into with the Maine Central Transportation Company whereby motor coaches of both companies are now operated through between Boston and Bangor, Me., and between Boston and Rockland, Me. Formerly, the B. & M. T. Co. operated its coaches only between Boston and Portland, and the M. C. T. Co. only between Bangor and Portland and Rockland and Portland, which necessitated not only a change of coaches in Portland on the part of the through passengers, but also limited the utilization of the motor coaches of both companies. Under the new pooled equipment arrangement, the utilization of the units of both companies in these services should be much increased.

Handicaps Overcome

The increase in mileage has been accomplished despite a large falling off in the business of chartered coaches. Some years ago, the B. & M. T. Co. had enough coaches to handle its peak loads, including charter business, but now purchases of equipment are made only as the needs of the regularly scheduled lines require. Competition has forced the rates for chartered coaches down to a point where it is no longer profitable to engage in such business except in cases where a coach may be available.

Another handicap to the production of miles per coach per year is the highly seasonal character of much of the B. & M. T. Co.'s traffic, serving as it does many of the New England seaside and mountain resorts. In addition to the two lines shown on the statement as operated only during the summer season, many other routes require more frequent schedules in the summer, particularly those serving the seashore resorts. The problem has been, and still is, to provide a reasonably sufficient number of units to take care of the peak traffic—which occurs between June 15 and September 15—and, at the same time, not have these coaches standing idle for the rest of the year.

The problem of utilization has been aided by a well regulated schedule of coach maintenance. Practically without exception, all major overhauling of coaches is performed in the winter season. As the coaches grow older and body work becomes necessary, requiring more time in the shops, this scheduling of major repairs at the proper time becomes increasingly important. It is important, also, for the purpose of keeping the mechanics employed the year round, thus providing a steady force. During the rush season, the shops busy themselves with running repairs, and, in the winter, with the major overhaulings, which amount, in many cases, to practically complete rebuilding.

The purchase within the past year of fourteen new coaches, as reported at the time in the *Railway Age*, will aid in the production of more coach miles.

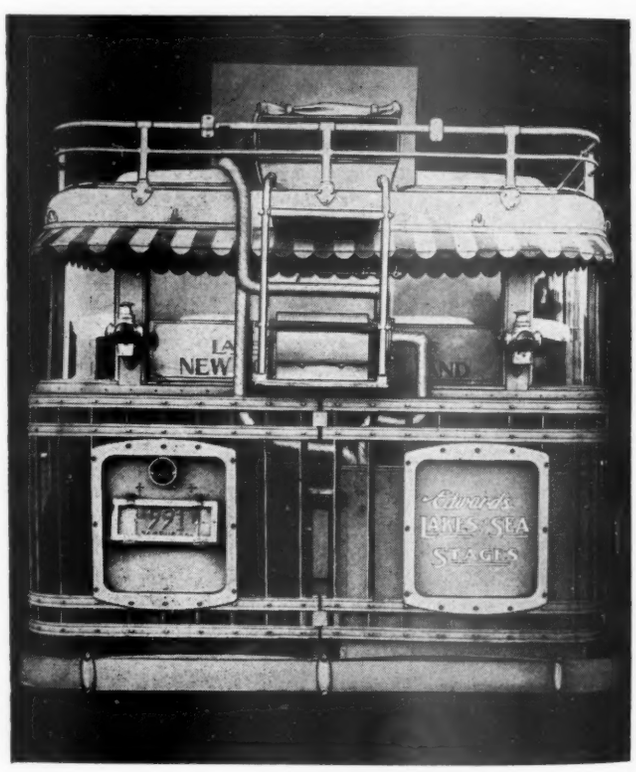
The concentration of major overhauling at the Boston workships has been found to be the most efficient method of getting needed coaches back on the highway again as soon as possible. The company's garages at Concord, N. H., and Portsmouth are occasionally used for what is termed semi-overhauling, but all other outlying shops confine their activities to running repairs only.

Despite a still further slight reduction in the number of coaches in service, it is expected that further improvement in annual coach miles and in miles per coach per day will be made this year.

First Air-Conditioned Coach

FOLLOWING an installation last year of an air distributing unit for motor coaches, the Edwards Motor Transit Company decided upon cooling its coaches during the summer of 1934, and that part of its route between Williamsport, Pa., and New York City was selected for test purposes.

Mechanical cooling on older type coaches is said to be out of the question, unless considerable money be spent in the purchase of new motor generator sets and batteries. Even if this expense were permissible, a tremendous problem would present itself in strengthening the construction of the bus to carry this equipment. Cooling by ice presents the only way to insure summer comfort and the rate of melting having been determined for a rather quick drop in temperature and the maintenance of that low temperature, the question then resolves itself into that of placing the ice bunker and pump. This ice bunker had to carry a minimum of 200 lb. of ice and it was finally decided that the only available space for such a bunker would be on the rear of the coach, replacing one of the spare tires, located between the back of the coach and the spare tire guard rack, the pump being mounted directly above, back of the baggage ladder.



Installation of Air-Conditioning Equipment

The operation may best be described by data covering

a test run furnished by the Rails Company, distributors of Airtrol equipment. This run was made on June 21 from New York to Williamsport, the coach leaving the New York terminal at 4 p. m. This coach had arrived in New York the night before and had been stored in a garage until one-half hour previous to its arrival at the terminal. At 3:30 the ice bunker was charged with 200 lb. of ice, the bus closed, and the pump started.

The street temperature at the garage was 100 deg. F. and the street temperature at the terminal 97 deg. The coach left the garage with a temperature of 80, arrived at the terminal, received its passengers and left at 4 p. m. The different terminal and traffic stops before leaving New York City, particularly at this time of day, make ordinary coach travel decidedly uncomfortable, for as soon as the coach stops it is flooded with odors and gases from traffic and from the heat of the streets. Without conditioning it would be impossible to close the windows and keep them closed, as was done on this run, until the coach approached Somerville, where the open country was reached.

During the run to Somerville, the windows were tightly closed and the coach temperature never exceeded 85 deg. F. When the open country was reached the windows were opened and the pump shut down. Easton, Pa., the first long stop, was reached about 7:30 and from then on all that was necessary for comfort in the coach was the circulation created by the fans and open ventilators.

If this coach had left New York on an early schedule, the cooling would have been accomplished in the same manner as described above, and when Easton was reached—at an earlier and hotter part of the day—any amount of ice, from 50 to 200 lb., could have been taken on, depending on the outside temperature and the length of cooling period that might be necessary until open country was reached again. The icing schedules for both trips have been worked out by the Edwards Motor Transit Company, Inc., to fit in with the rest stops so that no inconvenience is experienced in icing the bus when necessary.

The weight of the complete air conditioning equipment, as shown on the photograph, is approximately 300 lb. The electric motor for the fan is ⅛ hp. and the motor on the pump is ¼ hp. On the test runs and on subsequent runs no excessive drag on the coach electrical equipment could be noticed.

Railroads May Refuse Private Refrigerator Cars

(*Continued from page 118*)

matter of self-protection, adopted similar practices, not only with respect to shippers served by the railroads with which they had contracts, but with shippers located on other railroads. The competition is keen, resulting in the cutting of rentals and intensive solicitation of shippers. The most fertile field is shippers who have a fairly regular volume of traffic the year round, such as dealers in dairy products, canned goods, and candy. By leasing or renting only enough cars to take care of their assured traffic, leaving the carriers to furnish cars to move the remainder, they are able to keep their cars moving most of the time, and the mileage earnings usually exceed the compensation paid the car owners by substantial amounts. Shippers' advertisements are painted by the car companies on cars furnished under all forms of contract. Such advertising is valuable to the shippers and, together with other alleged advantages hereinafter mentioned, derived from the use of private cars, are held out as an inducement to shippers to use assigned cars, and in addition to monetary benefits are also held out to the users of leased and rented cars."

Summary and Conclusions

The commission's conclusions include the following:

It is well-settled law that it is the duty of common carriers by railroad to furnish such cars as may be reasonably necessary for the transportation of all the commodities they hold themselves out to carry. That duty, imposed by statute, necessarily implies that the carriers have the exclusive right to furnish such equipment. It is optional with them, whether they exercise that right by furnishing cars owned by them, cars owned by other carriers, or cars leased from independent contractors. Under modern conditions, refrigerator cars have become regular equipment.

A private-car owner, whether he be a shipper or not, has no right to have his cars used as a vehicle for the transportation of freight over the rails of any carrier without its consent. If the carriers have suitable cars and will furnish them on demand they may refuse to transport shipments in private cars. They are privileged to do so at any time they have, or will secure and furnish, suitable equipment to carry the commodities they hold themselves out to transport.

The carriers, by the rule here under consideration, reserve the right to furnish exclusively all refrigerator cars ordered by shippers other than meat packers. One of the grounds on which we are asked to find the rule not justified is that the use of private cars helps to hold traffic to the rails. We have no authority to require carriers to accept cars furnished by shippers for that or any other purpose. Therefore, unless the proposed rule will result in violation of the act, it is our duty to find it justified.

The circumstances and conditions surrounding and attending the use of private cars by the protesting shippers and packers differ in several particulars. The railroads hold themselves out to furnish suitable refrigerator cars to all shippers except meat packers. The protestant shippers do not undertake to furnish sufficient cars to take care of their entire traffic but lease, rent, or have on assignment, only such cars as they can keep moving regularly. These cars are used for shipments which will produce the highest possible mileage, and the railroads must keep available and supply cars for the less profitable movements and to take care of the rest of the traffic. Floor racks are removed from private cars by shippers of canned goods and candy, thereby rendering them unfit for other perishable traffic. The cars are moved loaded, in some instances, in the direction of the heavy movement of empty refrigerator cars, for example, from Chicago to the Pacific coast, and must be returned empty because of the absence of the floor racks. None of the shipper protestants who presented testimony own their private cars or have any capital investment in them. Most of those who lease or rent cars derive monetary profits from the mileage earnings and, thereby, obtain transportation at less than the published rates.

If the exception to the rule under consideration was limited to packers cars used in the transportation of fresh meats we might well find that it would not create undue prejudice or unjust discrimination. However, the exception in the rule applies to meat packers generally, and to all commodities handled by them, irrespective of the facts and circumstances surrounding and attending the use by them of private cars. The testimony, in justification of the exception to the rule, is confined to packers who have relieved the carriers from their obligation to furnish cars or, in other words, so far as can be ascertained from the record, to the six packers in whose behalf the joint presentation was made. There are a number of meat packers relative to whose business, and the facts attending their use of private cars, we have no information. The conclusion indicated is that condemnatory conditions such as we have described herein probably exist in connection with the use of private cars by some packers as well as by other shippers.

Considering these premises we believe the application of an exception to the prohibition against the use of refrigerator cars should be conditioned on requirements that will remedy the present uneconomical, discriminatory, and unlawful practices herein elsewhere described.

That there have been grounds for complaint in the past as to the condition of refrigerator cars furnished by the railroads and because of their failure or inability promptly to supply refrigerator cars in sufficient numbers to take care of perishable traffic offered is not convincingly denied and is admitted by some of the respondents. The statements of protestants as to the present condition and suitability of refrigerator cars now furnished by the railroads and those as to their ability to meet

all present demands were made without any real knowledge of the facts. The overwhelming preponderance of the evidence shows that the contrary is true, except as to the needs of certain packers. Cars furnished by the railroads are now being used satisfactorily for the transportation of all commodities shipped by protesting shippers. In some instances the private cars used by the shippers are identical with some of the cars owned by or contracted for by the railroads which would otherwise furnish the cars. With a few minor exceptions, the private cars, the use of which the railroads seek to prohibit, are obtained from private and railroad-controlled car lines and, in many instances, from the car lines supplying the railroads on which the industries are located. Were such private cars withdrawn from the exclusive service of the shippers it is reasonable to believe that they would be placed in the service of the railroads if and as the demand warranted, either under present or additional contracts. There would be no decrease in the available supply of refrigerator cars.

It is conceded that if the railroads make the necessary effort when cars are ordered from them they can place cars promptly for loading, can see that they are clean, free from objectionable odors, and in good condition, and otherwise render as efficient service as the shippers are now receiving by the use of private cars. That they will do so may confidently be expected, for, as the evidence shows, they will go to any legitimate extent to secure traffic. Competition is now too keen for them to treat reasonable demands of shippers with indifference.

An amended rule that will accomplish the purpose sought without undue prejudice or unjust discrimination is not only justified because of the exclusive right of the carriers to furnish cars, but also is advisable in the interest of economical operation and as a means of preventing unlawful rebates.

The conclusion is inescapable that the demand for the use of private cars by shippers is because of the profit flowing to them by the use of such cars. If such profits were denied to them, as we think they must be, it is inconceivable to believe that shippers would continue to pay amounts ranging from $30 to $50 per car per month when they could demand that the carrier supply suitable cars without cost over and above the freight charges properly applicable to the shipments transported.

The carriers should give careful consideration to complying with their legal obligations to furnish suitable refrigerator cars of their own ownership or those with whom they have contractual relations for the transportation of perishable commodities which they hold themselves out to transport. This applies equally to the cars for the transportation of products of the meat packers. In the interest of efficiency and economy of operation and considering the seasonal needs of refrigerator cars a pooling of such cars under unified operation might well be considered.

The discussion herein has been confined almost entirely to refrigerator cars and the findings will be so restricted, but the general principles enunciated apply equally to all other types of private cars.

We find that the proposed amendment of rule 35 is justified but that the proposed section 1 of rule 36 is not justified, without prejudice to the filing of an amended rule conforming to the suggestions herein. Such amended rule should not contain an exception in favor of meat-packing companies as now proposed. We further find that the use of private refrigerator cars by shippers results in uneconomical operation and unnecessary expense to the carrier; that a shipper who pays only the published rates and uses private cars displaying advertising matter receives something of value in addition to the transportation of his traffic not available to those using cars furnished by the railroads and that the practice should be prohibited; that the payment in whole or in part to shippers, including meat packers, of mileage earnings by railroads either direct or through car owners in excess of the amount of rental said shippers pay for the use of the cars and other actual expenses in connection therewith results in such shippers receiving transportation of their products at lower rates than those paid by shippers generally who use cars furnished by the carriers and at less than the published rates; and that any allowance paid to the shipper-owner of private cars, including meat packers and their operating subsidiaries or agents, by the railroads as mileage earnings in excess of the ownership cost, including a fair return on the investment, are unreasonable, unjustly discriminatory, and unlawful rebates and concessions.

We do not undertake to say that a carrier may not accept private cars if it so desires, but if such cars are accepted the carriers may not acquiesce in arrangements under which mileage earnings accruing to the car owner are paid in whole or in part by such car owner to the shipper lessee which results in the payment by such shipper of charges less than the published tariff rate.

Respondents will be expected to take the necessary action to remedy the conditions found uneconomical and unlawful herein.

Odds and Ends . . .

Organist Invented Locomotive Whistle

The locomotive whistle can claim a musical pedigree. It was invented by an English organist more than a century ago following a grade crossing crash between a train and a farmer's cart on the Leicester and Swannington Railway. In its original form it was not known as a whistle but was called a "steam trumpet."

Champion Loser

You've heard of the men who lost a bass drum, but Ed. Leavell, head of the Missouri Pacific Transportation Company at Ft. Smith, Ark., sets a new record. He lost a 29-passenger bus recently. The bus came in from Little Rock and was placed in front of the Missouri Pacific garage. It was there at 4:30 p.m. Leavell saw it. At 5 o'clock he looked out and it was gone. At 11:30, after scouring the surrounding country for miles and with all peace officers on the lookout for it, Leavall and A. S. Kline, Missouri Pacific special agent, found the bus nine miles away, near Alma, Ark. It was undamaged and was returned to the garage. A warning is being issued to circuses in the vicinity to keep an eye on their elephants.

1,100,000 Miles as a Commuter

Addison H. Day, who retired as comptroller of the Marine Midland Trust Company, New York, on June 21, has probably established a record for the greatest mileage as a commuter by traveling 1,100,000 miles on the Delaware, Lackawanna & Western between New York and Chatham, N. J., during the past 65 years. In commemoration of his retirement, he was taken from the Lackawanna's terminal at Hoboken, N. J., to Chatham on the Addison H. Day Commuter Special, a train named in his honor, accompanied by James G. Blaine, president of the Marine Midland Trust Company and other officers of the bank, and J. M. Davis, president and other officers of the Lackawanna. Farewell ceremonies were held at Hoboken, Mayor LaGuardia and Governor Moore of New Jersey, mayors of the cities and towns along the line to Chatham, Mr. Blaine of the bank and Mr. Davis of the Lackawanna, participating.

Union Switch & Signal Company Receives Award

The Elliott Cresson medal was awarded to the Union Switch & Signal Company by the Franklin Institute of the state of Pennsylvania, acting through its committee on science and the arts, investigating the automatic speed control, automatic train stop and automatic cab signal system. The presentation of the medal and certificate took place at the Franklin Institute, Philadelphia, on May 16, 1934. The Elliott Cresson medal and certificate, which is one of the 10 awards made by the Institute, is the oldest medal awarded, as the fund for this award was established February 18, 1848, by Elliott Cresson, Esq., Philadelphia. The medal is awarded "for discovery or original research, adding to the sum of human knowledge, irrespective of commercial value; leading and practical utilizations of discovery; and invention, methods or products embodying substantial elements of leadership in their respective classes, or unusual skill or perfection of workmanship."

The Elliott Cresson Medal

Communications . . .

Another Railroad "Fan"

To the Editor: Chicago.

I have noted with interest your editorial anent railroad "fans." It so happens that I come under this classification. I am probably prejudiced, but it does seem that nothing has ever been done to foster such interest as now seems to be static as regards the younger generation. I sometimes think that perhaps the roads might profit through the issuance of various topical and historical pamphlets not necessarily free, but for a nominal charge, written by someone with the true enthusiasm for the real force the railroad has been and still is in the continual development of the resources which we possess in such great measure. While I speak from the standpoint of the collector and not of the general run of potential business possibilities, at the same time I wonder if it is still not possible to create more enthusiasm for something we vitally need and should appreciate more than we apparently do.

D. W. Yungmeyer.

Increasing Interest in Railroads

New York.

To the Editor:

Railroad "fans" are legion, as stated in the letter published in your issue of June 30, from T. T. Taber, chairman, Railway & Locomotive Historical Society, and in your editorial of June 9, to which he alludes. As he points out, this inherent interest has not been cultivated as intensively as might have been done by the railroads. To be sure, railroad exhibitions, such as the Fair of the Iron Horse and the splendid displays of the railroads at the Century of Progress Exposition, meet the criticisms voiced, but unfortunately not all railroad "fans" can visit these displays. Hence, the need to bring the railroad to the very doorstep of its potential friends, in an effort to re-create an interest in the railroads, particularly on the part of "Young America," and to endeavor, in this manner, to make people "train-conscious."

The Baltimore & Ohio, for example, has undertaken to run down every letter appearing in your columns and to open its facilities to various groups who are interested in inspecting trains, enginehouses, towers and the like at points on its lines. This is one way of counteracting the shows put on at airports, where all visitors are always welcome, as well as the open-house maintained by steamship lines at New York and elsewhere on sailing-day. Even if it is only a nibble, it is a step in the direction of encouraging the widespread latent interest in railroads which one finds in so many, and such unusual, places.

I have found that groups of boys and young men can scarcely be dragged away from trains, locomotives and dispatchers' offices, and I have found, similarly, that there are engineers, conductors, dispatchers, etc., who regard it as a real pleasure to take these boys in hand to show them everything in the most painstaking manner, realizing that in so doing they are building for the future in arousing a long-dormant interest in the Iron Horse. Their co-operation in making these boys welcome on their engines and in their offices goes far toward successful demonstrations of this sort.

Some five years ago, I urged that skeleton trains—club car, one sleeper, diner and observation—be exhibited permanently in various stations; that the public be welcomed at any time, and that folders descriptive of rates for various types of accommodations be presented to visitors. The response was unanimous. The idea was, in short, "the bunk," or else track-space was not adequate, etc., etc.

Recently, some Boy Scouts inspected trains and station facilities. Some of them had never ridden in a train. Their reaction was two-fold: First, they wanted to ride a train home (they had reached the station by bus) and second, they wanted to take an excursion to a distant point which the railroad was to run.

The steam locomotive can be dramatized; the passenger car glorified; the whole railroad humanized. It need not be a cold, frigid machine, viewing everyone with suspicion who wishes to admire it at closer range. It can be cordial, a "good neighbor," like a clever business man, displaying his wares to all and sundry, even though his guests, at the moment, may be penniless. There are few persons who do not appreciate and remember a cordial welcome. The industry, or company, which extends this has made friends for life. If it serves to re-build an interest in railroads on the part of boys, who are now being cultivated assiduously by the air-lines, it is a helpful, constructive and traffic-building policy.

Franklin Snow.

Traffic Tips for Those "Unaware or Indifferent" Railroad Men

Terre Haute, Ind.

To the Editor:

There are certain conditions in the transportation field of which some important railroad men are either unaware or indifferent to. The bus companies offer services that demand study of the traffic department of the railways.

It seems that many railroads do not even make an attempt to regain patronage from the bus to the day coach. The railroads could offer a much superior baggage service than the bus. In the matter of fares, there should be no problem—they should not be more than those of the competing bus lines except over very long hauls where time counts. Even if the bus is slower, it is more frequent, so why should their operators kick? For the person who rides the bus or day coach, money is the first consideration.

One thing many people hold against rail travel is that it is boresome and that the people aren't sociable. The rest stop of the bus might be duplicated by the railroads to a lesser extent of course.

Convenient station facilities: Where the station is unhandy, some arrangement could be made with a local taxi firm for transfer and downtown waiting facilities, or the traction company might serve.

Local stops: A bus will take on a passenger at any small town and discharge him almost anywhere. The only way the railroads can meet this is by the use of new, smaller equipment especially that with electric transmission.

Commission agents and salesmen: Little need be said here except to suggest that a part time representative (drug store, etc.) in a village where the station has been closed would help a great deal if decent train service at a low fare were provided.

Marking cars: Many people would like to get out at terminals if they were sure of getting to the right car.

Seats and pillows: The eastern roads have not yet made much of an attempt to attract night customers to the day coach, although the overnight train is the railroads' best bet against all competition.

The aviation industry has added something to their service in the form of the stewardess. There is something about the idea of having a young woman in this capacity that is attractive to women as well as men. She is more personal than a man could be.

There are a few things in the freight situation that stand out because of their ease of adoption. It costs about 15 cents a mile to operate a two-ton truck over the road. If the railroads can handle a flat car for 15 to 25 cents a mile, they can get traffic by use of the ferry truck system. The ease with which this system can be put into effect and lack of resistance from the truck operators (since they could use this service) should place it above other systems in the eyes of the railroad operator. Use the same methods as are used for circuses. It can be done! The study of the electric railways might be useful for both freight and passenger service—a three-man crew on a two- to five-car train.

The bus manufacturing companies are now putting on the market buses of very short wheelbase, probably suitable for railroad use with some alterations. By using two of these together with one motor (mechanically practical on rails) you have a 40-50 passenger train, or 20-25 passenger train plus a 25 ft. mail or baggage compartment.

Raymond Harrod.

NEWS

Reorganization Proposed for Railway Associations

Plan now being studied contemplates a consolidation of the A. R. E. with the A. R. A.

In line with the recommendations that the railroads form a "more perfect union," included in Co-ordinator Eastman's report to the President on January 20, the advisory committee of the Association of Railway Executives has for some time been giving consideration to a plan for a reorganization of the Association of Railway Executives and the American Railway Association under which these associations, which both represent the Class I railroads but perform different functions, would be combined into a single new organization representing the railroads in all their collective activities. Various other railroad organizations now operating more or less independently might also be brought directly into the new organization, such as the Bureau of Railway Economics, the Railway Accounting Officers' Association, and others.

The subject was discussed at the recent meeting of the Association of Railway Executives at Atlantic City and is being further studied by a committee appointed by R. H. Aishton, chairman of the Association of Railway Executives, consisting of: W. W. Atterbury, president of the Pennsylvania; F. E. Williamson, president of the New York Central; J. J. Pelley, president of the New York, New Haven & Hartford; H. A. Scandrett, president of the Chicago, Milwaukee, St. Paul & Pacific; Hale Holden, chairman of the Southern Pacific; and W. R. Cole, president of the Louisville & Nashville.

Part of the plan, it is understood, is to arrange for increasing the authority of the central organization representing the railroads and possibly the scope of some of its activities. Headquarters would be at Washington, D. C., with offices also in New York and Chicago.

At the Atlantic City meeting the association ratified a plan for bringing about a better organization in the several states for handling matters of common interest, such as those pertaining to legislation and a resolution was adopted setting up in tentative form committees charged with the duty of carrying on the educational work of the association in a way which will result in closer contact with those responsible for public sentiment.

Equipment on Order

Class I railroads on July 1 had 17,813 new freight cars on order, according to reports received by the Car Service Division of the American Railway Association. On the same day last year, 1,205 new freight cars were on order and on the same date two years ago, there were 1,951.

The railroads on July 1 also had 40 new steam locomotives on order and 107 electric locomotives. New steam locomotives on order on July 1, 1933, totaled one and on the same date in 1932, there were six on order.

In the first six months of 1934, the railroads installed 5,360 new freight cars. In the same period last year, 1,251 new cars were placed in service and for the same period two years ago, the total number installed was 1,927. One new steam locomotive and eight new electric locomotives were installed in service in the first six months this year. The railroads in the first six months of 1933 installed one new steam locomotive, and 34 in the corresponding period in 1932.

Freight cars or locomotives leased or otherwise acquired are not included in the above figures.

Railroad Loans from R.F.C. Greatly Reduced in Past Year

Outstanding loans from the Reconstruction Finance Corporation to the railroads amounted to $353,364,567 on June 30, according to a report made public by the corporation for the year ending on that date, but Chairman Jesse Jones finds indications of improvement in the railroad financial situation in the fact that the R.F.C. was called upon for new loans to railroads during the period covered by the report in only a few instances. Loans to six railroads authorized during the year amounted to $12,860,604, although $31,917,442 was actually disbursed on railroad loans during the year, and five railroads repaid their loans in full to the amount of $35,906,823. Chairman Jones has also announced a willingness to aid railroads in need of refinancing by entering into agreements with them similar to that made with the Baltimore & Ohio, by which the R.F.C. will stand ready to purchase the unsold part of issues offered to the public on the same terms as are made by the bankers.

The aggregate market or appraised value of the collateral held by the R.F.C. for the $353,364,567 of railroad loans outstanding was stated as $584,657,091, but the railroad division of the corporation estimated a deficiency in the collateral for ten railroads of approximately $23,000,000. The ten roads include two now in the hands of receivers, four operated by trustees under the bankruptcy law, and four others whose collateral appears to be inadequate at this time.

Expedition in Replacement of Arch-Bar Trucks Urged

Eastman expresses hope that date for completion of work will not be extended

Co-ordinator Eastman has sent to the Regional Co-ordinating Committees of the carriers a letter expressing the hope that the railroads will take such action as may be necessary to expedite the replacement of arch-bar trucks with cast-steel side-frame trucks, and to assure that in no case will any existing arch-bar trucks be replaced in kind, whether in maintenance or betterment work; in other words, that replacements be made exclusively with cast-steel side-frames. He had discussed this matter with the committees at his meeting with them a year ago, with the understanding that such replacements were to be carried out as rapidly as possible, and that the work was to be completed by January 1, 1936, after which date cars equipped with arch-bar trucks will be barred from general interchange by an order of the American Railway Association. It is important, he says, that the date for completing this work shall not be extended. On July 1, 1933, there were 658,306 cars, or 32.1 per cent of the total, still equipped with arch-bar trucks. Attached to the letter was a memorandum from O. C. Castle, director of the Section of Car Pooling, giving statistics to show that "there is need for a program directed at the reduction of accidents due to defective or obsolete equipment," and which he believed indicated that "arch-bar trucks are a prolific source of trouble and expense." The hope was expressed that all future repair programs contemplate the replacement of arch-bar trucks with modern trucks as recommended by A.R.A. standards and that there be no extension of the date for barring arch-bar truck equipment in interchange.

Maintenance Associations Resume Activities

Proceeding with the specific approval of the Western Association of Railway Executives, both the Roadmasters' and Maintenance of Way Association and the American Railway Bridge and Building Association are planning to resume the holding of conventions this fall. Neither association has met since 1930. The Roadmasters will hold their forty-ninth annual convention at the Hotel Stevens, Chicago, on September 18 - 20, while the Bridge and Building Association will also meet in Chicago on October 16 - 18.

M. W. Latimer Appointed Chairman of Railroad Retirement Board

President Roosevelt on July 21 announced the appointment of Murray W. Latimer, of New York, as chairman of the Railroad Retirement Board created by the new law approved on June 27.

Two other members, appointed from recommendations made by the railroads and by the labor organizations, were named by the President on July 26. They are John T. Williamson, superintendent of the relief and employment department of the Chicago, Burlington & Quincy and chairman of its pension board; and Lee M. Eddy, vice-president of the Order of Railroad Telegraphers.

Mr. Latimer has been in charge of statistical work being carried on in New York in connection with the study of pension systems conducted for the federal co-ordinator of transportation and his Labor Relations Section and is regarded as one

Murray W. Latimer

of the foremost pension authorities in the country. He was graduated from the University of Mississippi, from the Harvard Graduate School of Business Administration, and did graduate work at Columbia University. He has been engaged for several years as industrial relations counselor and pension and actuarial consultant and is the author of "Industrial Pension Systems in the United States," and "Trade Union Pension Systems in the United States."

A. S. T. M. President Dies

William Hastings Bassett, president of the American Society for Testing Materials and metallurgical manager of the American Brass Company, died suddenly on July 21 at his home in Cheshire, Conn. Mr. Bassett, who was 66 years old, had been president of the A.S.T.M. only a few weeks, having been elected in June at the annual convention in Atlantic City.

Comprehensive Study of Motor Truck Use Announced

Plans for a far-reaching study of the use of motor trucks in the marketing of fruits and vegetables were announced recently by the Co-operative Division of the Farm Credit Administration. The plans call for studying practically all phases, it is announced, of the motor truck problem in the marketing of fruits and vegetables, especially as it affects farmer-co-operative associations. It is being made at the urgent request of a large number of state and national farmer's associations as well as many members of the produce trade, the Farm Credit Administration points out. The survey will cover New York city and the area economically tributary to it, comprising New York, Massachusetts, Connecticut, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina.

New Northern Pacific Locomotive to Join World's Fair Pageant

The first of 10 roller bearing locomotives, which are now under construction for the Northern Pacific, will assume a role in the "Wings of a Century" pageant at a Century of Progress Exposition at Chicago on September 15. This locomotive is one of a new fleet which will haul the North Coast Limited trains between Jamestown, N. D., and Missoula, Mont., a run of 906 miles.

British Accidents, 1933

The total number of passengers killed in train accidents on the railways of Great Britain in the calendar year 1933 was six, and of employees 11, as shown in the table below. The six passengers were the victims of two train accidents. This record of passengers injured is the highest in five

British Accidents, 1933

	Train Accidents		Train Service Accidents		Total	
	K.	*Inj.*	*K.*	*Inj.*	*K.*	*Inj.*
Pass.	6[1]	619[2]	64	4097	70	4716
Emp.	11	81	152	2406	163	2487
	17	700	216	6503	233[3]	7203

[1] One in 262 millions carried.
[2] One in 2½ millions carried.
[3] Adding "other persons" to this total of 233 passengers and employees killed, we have a total of 282 killed, the smallest total in 30 years. The corresponding total of injured, 7,348, is slightly above the five-year average, 1925-29.

years, but the total includes 246 injured as the result of buffer-stop collisions, most of whom suffered from shock.

The record of accidents at highway grade crossings shows only 39 persons killed and 42 injured; and no less than 30 of the killed and 13 of the injured were pedestrians. This record is said to compare favorably with the average for the five years 1925-29.

Improved Freight Movement in Montana

An increase of 15.2 per cent in carloadings in the third quarter is expected in the territory of the Northwest Shippers' Advisory Board, Montana division, as reported at Billings, Mont., on June 26. It is anticipated that loadings of the 25 commodities listed will be 425,737 cars, as compared with actual loadings of 369,647 cars in the same period of 1933; increases in the loading of 13 commodities, and decreases in the loading of six, while six are expected to show no change.

The meeting was featured by addresses by Dr. Alfred Atkinson, president of Montana State College, on "American Agriculture Against a Changing Background," and Robert C. Line, dean of the school of business of the University of Montana, who spoke on business trends.

National Mediation Board Appointed

By radio from his cruiser en route to Hawaii President Roosevelt on July 21 announced the appointment of the three members of the new National Mediation Board created by the amendments to the railway labor act approved on June 21 which supersedes the Board of Mediation created by the act of 1926. Under the new law the old board was abolished, effective 30 days from the approval of the new act: The members of the new board are: James W. Carmalt, of Washington, D. C., executive and legal assistant to the federal co-ordinator of transportation; William M. Leiserson, professor of economics at Antioch College, Yellow Spring, Ohio, and

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James W. Carmalt

chairman of the Petroleum Labor Policy Board, Washington, D. C.; and John M. Carmody, chief engineer of the Federal Emergency Relief Administration, Washington, D. C.

The old board had two vacancies which the President had not filled because of the probability that it would be superseded. The three retiring members are Samuel E.

(c) *International News Photos, Inc.*
William M. Leiserson

Winslow, who has been chairman since the organization of the board in 1926, O. B. Colquitt and E. P. Morrow.

Mr. Carmalt, prior to his appointment by the co-ordinator a year ago, had been engaged in law practice in Washington since 1919, specializing on interstate commerce ma ters. He was chief examiner

of the Interstate Commerce Commission from 1915 to 1918 and in 1918-1919 was assistant to the general counsel of the United States Railroad Administration.

Dr. Leiserson was born in Esthonia in 1883 and came to the United States in 1890. He was graduated from the University of Wisconsin in 1908 and received the degree of Ph.D. at Columbia University in 1911. From 1909 to 1911 he served as an expert on unemployment for the New York Commission on Employers' Liability and Unemployment. Later, from 1914 to 1915, he was assistant director of research investigation for the United States Commission on Indus rial Relations and from 1918 to 1919 he was chief of the division of labor administration of the United States Department of Labor. He has been professor of economics at Antioch College since 1925.

Mr. Carmody was formerly a member of the firm of Stevenson, Jordan & Harrison, at New York, and at one time was editor of "Factory and Industrial Management." He was educated at the Elmira, N. Y., Academy and at Columbia

(c) *Harris & Ewing*
John M. Carmody

University and has been connected with the American Bridge Company as shop inspector, with the Delaware, Lackawanna & Western, with R. W. Hunt & Co. as bridge inspector and chief inspector, with James T. Ryerson & Sons, the American Steel Company, and the Davis Coal & Coke Company. He was appointed by President Roosevelt as chairman of the National Bituminous Coal Labor Board and more recently has been connected with the Federal Emergency Relief Administration.

At its first meeting in Washington the board organized by electing Dr. Leiserson chairman.

Production of Rail Joints and Tie Plates Increases in 1933

The production of rail joints and tie plates in the United States in 1933 totaled 186,798 gross tons, an increase of 23,245 gross tons, or 16.1 per cent, as compared with 1932, according to figures compiled by the American Iron & Steel Institute. The output of tie plates alone amounted to 142,414 tons, as against 109,666 tons in 1932, an increase of 29.9 per cent. The production of angle splice bars increased from 28,155 tons in 1932 to 33,307 tons in 1933; fish plates from 1,331 tons to 3,000 tons; and other rail joints from 4,401 tons to 8,077 tons.

Service of Ocean Steamship Company Found Not Competitive

The Interstate Commerce Commission has issued a report finding that the present local passenger services of the Ocean Steamship Company of Savannah between Boston and New York, and its proposed local freight service between those ports are not competitive with the Central of Georgia and the Illinois Central and would not and could not exclude, prevent, or reduce competition on the routes by water between the East and other sections. The company had filed a tariff covering the proposed local freight service to become effective November 6, 1933, which was suspended and later withdrawn. A new application was then filed by the Central of Georgia and the Illinois Central, which was opposed by the Eastern Steamship Lines. The report is in effect an affirmation of the findings of the commission's report of December 23, 1915.

Urges Action as to Fruit and Vegetable Containers and Loading Rules

Disappointed with the report of a special committee appointed by the Regional Co-Ordinating Committees on a proposal by his eastern regional director as to a plan for prescribing standard specifications and loading rules for fresh fruits and vegetables, Co-ordinator Eastman has addressed a letter to the committees offering them an opportunity to give the matter further and "more adequate" consideration. "If voluntary action by the railroads cannot be obtained," he says, "the alternative is an order from me under the provisions of the emergency railroad transportation act, 1933." The proposal was sent to the committees on December 8, 1933, and they have sent him copies of a report by a special committee consisting of C. E. Denny, president of the Erie, L. A. Downs, president of the Illinois Central, and Paul Shoup, vice-chairman of the Southern Pacific, with statements indicating that it meets with, at least, their tentative approval.

"I find this report a disappointing document," Mr. Eastman said, "for it apparently fails to grasp the reasons for the proposal and deals quite superficially with it. It is quite possible that the report was framed in the light of unstated considerations, for those which are stated are plainly inadequate." A memorandum in comment on the report, prepared by his executive and traffic assistant, Charles E. Bell, was submitted with the letter, in which Mr. Bell advised that "in view of the attitude of the special committee, which has the approval of the respective Regional Co-ordinating Committees, the Co-ordinator is fully justified in exercising his authority and issuing an order requiring that the carriers set up an agency of the character recommended by the regional director, and clothed with the power and authority therein set forth," with some exceptions. Mr. Bell also said in part:

"Although the railroads of the United States are paying millions of dollars annually in loss and damage claims caused by the use of inferior and unsafe containers for, and the improper loading of, fresh fruits and vegetables, which could be conserved by proper and uniform container and loading specifications (to say nothing of the increased revenue they would derive from increased car-loadings), the special committee has offered nothing new or constructive for remedying the situation. Actually, present practices would simply be perpetuated. Any argument to the contrary, including the statements contained in the report of the special committee, is mere sophistry. Nor is any argument needed for one who is familiar with the carriers' methods and procedure.

"The regional director's proposal contemplated an agency which would study, test and prepare specifications and loading rules, and which *would have the ability, and be given the authority* to prescribe standard specifications and loading rules for the commodities involved, either by setting up such an agency or by expanding and extending the scope of an existing agency. It further contemplated that such agency would hold hearings on subjects considered by it, and that the decision of the agency should be final and subject only to review by the Interstate Commerce Commission. It also contemplated that such agency would publish the container specifications and loading rules in an appropriate uniform tariff, with the power to police and enforce them.

"As a practical matter the plan of the Special Committee goes no further than to place recommendatory powers in the hands of the Freight Container Bureau of the American Railway Association."

No Reduction in Rates on Building Materials Contemplated

Executives representing eastern, western, and southern railroads attended a meeting at Washington on July 20 with the Federal Housing Administrator, James A. Moffett, at which, according to a statement issued from Mr. Moffett's office, "leading representatives of manufacturing, railroading, and labor pledged the fullest co-operation in making the home improvement and building plan (proposed in the national housing act recently passed by Congress) an immediate success." The railroads were represented by C. E. Denney, president of the Erie, L. A. Downs, president of the Illinois Central, Fred W. Sargent, president of the Chicago & North Western, and R. V. Fletcher, general counsel of the Association of Railway Executives.

The co-operation promised, however, it was stated after the meeting, did not extend to a reduction in freight rates on building materials. There has been talk of a plan for bringing about a reduction in prices of building materials, in wages of bulding labor, and possibly a reduction in freight rates to stimulate a revival of home building construction and modernization, but the Housing Administration apparently has not gone so far as to urge such a plan. The railroad representatives were asked if they could give any assurances along that line and replied that on the contrary the railroads are planning to ask for some increases in rates to meet increases in their expenses brought about

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SUPER-POWER STEAM LOCOMOTIVES

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directly or indirectly by governmental action. Representatives of the manufacturers, it is understood, held forth no promise of a reduction in prices beyond that in lumber prices recently announced and the representatives of labor indicated that they could not promise any reduction in standard wages, although it was said that some adjustments might be made locally.

Equipment and Supplies

P.W.A. Loans for Equipment Give Orders to 22 Companies

The widespread effect of the orders for new equipment placed by the railroads with loans from the Public Works Administration is illustrated in a statement for the press isued by the P.W.A.

Up to June 15, 8,300 men had been put to work in car building shops and 3,700 had been put to work in locomotive building shops by P.W.A. loans of $61,973,000 to 18 railroads for purchasing equipment, according to reports to the Bureau of Labor Statistics of the Department of Labor by the car and locomotive manufacturers who received the orders for this new equipment.

"These P.W.A. loans have revitalized the stricken railroad equipment industry, which has passed through three years of virtual stagnation, and brought wide recovery to the industry and the communities supported by it," the statement says.

The $61,973,000 of loans were made by P.W.A. for purchase of 14,475 freight cars 264 passengers train cars, 68 steam locomotives and 20 separate tenders for steam locomotives, 76 electric locomotives, 21 Diesel electric locomotives and 4 articulated stream-lined trains. P.W.A. also has made loans totalling $23,226,000 for manufacturing 7,920 freight cars, 75 passenger cars and 25 electric locomotives in shops owned by the railroad companies. These loans have created a great amount of employment for railroad shopmen. Additional employment for railroad shopmen has been created by $28,697,343 of loans to railroad companies for repairing or rebuilding old cars and engines in their own shops. Employment for thousands of trackmen and other outside railroad employees has been created by P.W.A. through the $45,000,000 loan to the Pennsylvania for completing its electrification between Washington and New York, and other loans totalling $32,132,657 made to a number of roads for miscellaneous roadway improvements and purchasing new rails.

Twenty-two companies have received orders for the equipment being built in outside shops and the 12,000 men employed reported by them to the Bureau of Labor Statistics are at work in their assembly plants located in 23 cities. Only 100 freight cars, 59 electric locomotives, 13 Diesel-electric engines and 1 high speed train remain unordered.

At least twice as many men are estimated to be indirectly employed in producing and processing raw and finished materials, generators, and many other parts that go into the assembled engines and cars.

"Railroad equipment manufacturing in normal times is one of the most important branches of the heavy industries, and it was one of the hardest hit by the depression," the statement points out.

"Another indication of the substantial boost that P.W.A. loans have given to the car and locomotive building industries is the high percentage of the total number of men employed by the companies which received the orders who are working on cars and engines financed by P.W.A. The car builders reported that out of 12,400 men employed in their assembly plants 8,300, or 66.8 per cent were at work on cars being built with P.W.A. money. The locomotive builders reported that out of 4,127 men at work in their shops 3,700, or 89.6 per cent were employed as a result of P.W.A. loans.

"The men not employed on equipment being manufactured with P.W.A. money were at work on cars and engines ordered by industrial companies or by railroad companies which have not borrowed from P.W.A. The law authorizes P.W.A. to make equipment loans only to railroad companies, and no loans for that purpose have been made to oil or chemical companies, coal or lumber companies, meat packers, milk distributors, steel manufacturers or other industries which own large numbers of cars and engines."

LOCOMOTIVES

Electric Locomotives for P. R. R.

The Pennsylvania has placed orders to proceed with the construction of 28 electric passenger locomotives. The new locomotives will be of the same general type as those now in regular passenger service between New York, Philadelphia, Pa., Wilmington, Del., and Paoli, Pa. The cab, however, has been re-designed, giving the engine more symmetry of line.

Each end of the new locomotive will slope gently inward from the floor to the cab roof, with rounded shoulders running toward the central operating compartment. Location of the engineman's control position in the center instead of at the ends of the cab will make possible a locomotive generally more attractive and pleasing to the eye.

The engines will be part of the fleet of 101 new electric locomotives with which the railroad will inaugurate through electric service for both passenger and freight trains between New York and Washington early next year.

The Westinghouse Electric & Manufacturing Company will build 12 of the new electrics, the General Electric Company 5, and the railroad's Altoona Works will assemble the other 11, the propulsion equipment for which will be supplied by the electrical companies.

MISCELLANEOUS

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has placed with the Timken Roller Bearing Company an order for bearings and boxes for the 25 new baggage cars which the road will build in its shops at Milwaukee, Wisc.

Supply Trade

William B. Given, Jr., president of the American Brake Shoe & Foundry Company, has been elected a director of the **American Arch Company.**

The Woodings-Verona Tool Works and the **Woodings Forge & Tool Company,** Verona, Pa., have opened a Chicago office in Room 648, Peoples' Gas building, 122 S. Michigan avenue. This office will be in charge of **R. J. McComb,** sales manager of the Woodings-Verona Tool Works, who will supervise the sale of products of both companies in the Middle West and West, as well as direct the sale of products of the Woodings Forge & Tool Company to railroads in Chicago and vicinity.

OBITUARY

Lawrence H. Vilas, president of the Pyle-National Company, Chicago, died suddenly of a heart attack on July 22, in the Palmer House in Chicago. Mr. Vilas was born in 1895 at New York and entered the service of the Pyle-National Company in 1915. After two years, he left this company to serve overseas with the United States army during the World War. Following the war, he returned to the service of the Pyle-National Company in 1919, serving successfully as chief clerk, assistant general manager and general manager until 1928. During the next four years, Mr. Vilas was out of the service of the company, but in 1932 he resumed active service as president, which position he held continuously until his death.

TRADE PUBLICATIONS

SWITCHES AND PANELS.—The Switch and Panel Division of the Square D Company, Detroit, Mich., has issued new pages for its loose-leaf catalog No. 37. About 160 pages, a number of which are entirely new, are being distributed. These will bring the catalog completely up-to-date. The catalog includes prices and descriptions of a complete line of switches, fuse cabinet and switch combinations, circuit breakers, Safelex panels, lighting and industrial circuit breakers, switchboards, meter boxes, Square duct, RectiFilters and other equipment.

RAIL DEFECTS.—A pocket size, neatly bound, loose-leaf manual on rail defects has been issued by Sperry Rail Service, Brooklyn, N. Y., which is designed to clarify many aspects of the different types of rail failures and to assist in their detection and proper classification. The manual clearly illustrates the various types of defects and in each case discusses briefly the occurrence and importance of the defect, its cause and how it progresses, and how to identify it before and after the rail is broken. In loose-leaf form, the manual permits the ready addition of supplemental data which may be issued by the company from time to time. Price—in quantity lots, including future additions, 35 cents.

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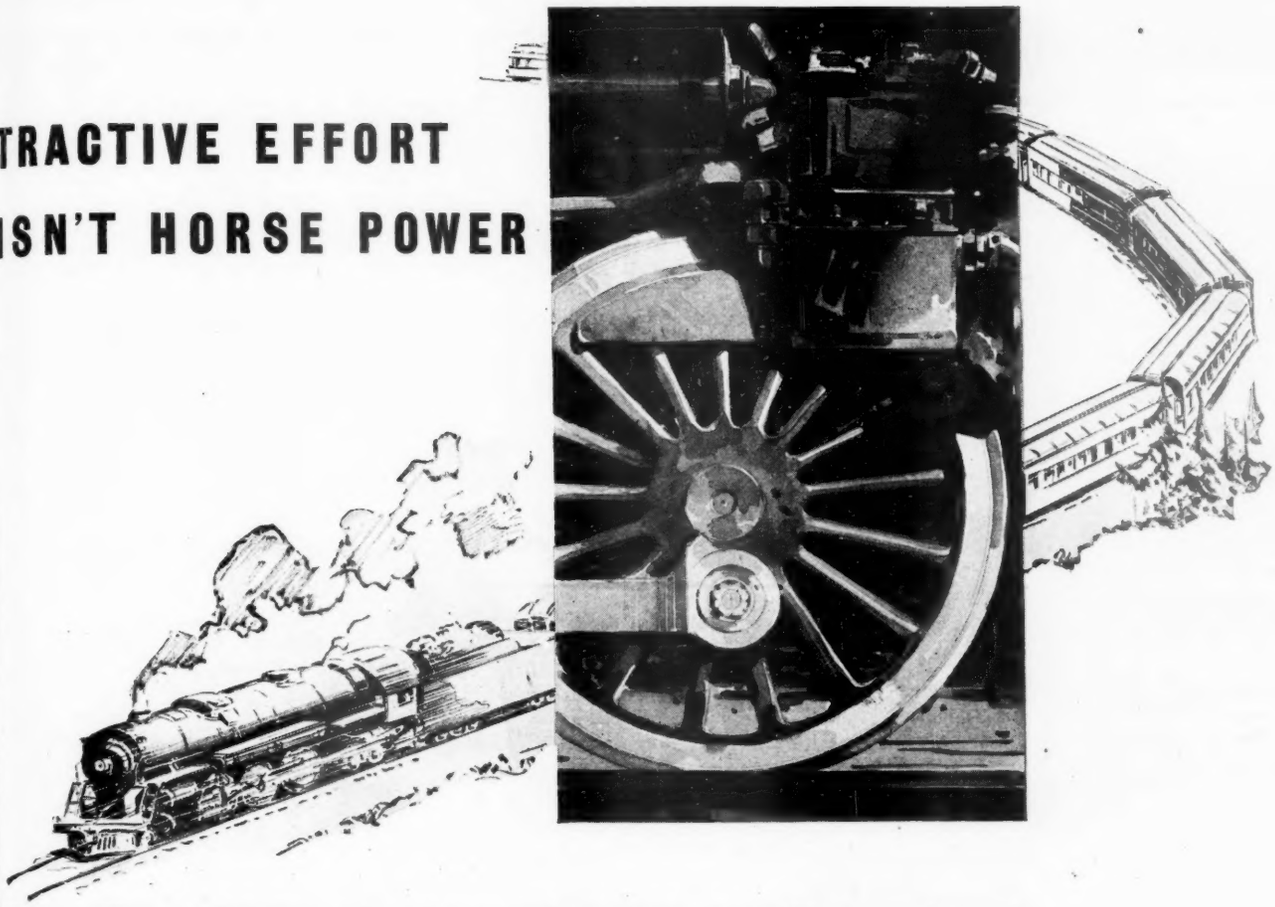
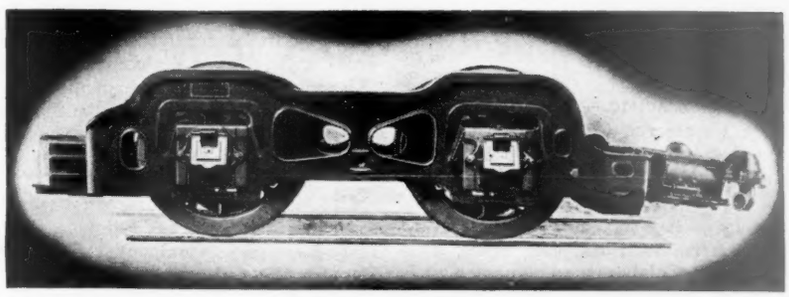
TRACTIVE EFFORT ISN'T HORSE POWER



Tractive effort is what starts a heavy train and accelerates it quickly to road speed. « Horsepower is what takes it quickly over the road and speeds up schedules. « Tractive effort is determined by cylinder size and by active adhesive weight on the rail. « Horsepower is determined by cylinder size and boiler capacity. « The Locomotive Booster makes all wheels back of the leading truck active driving wheels and gives a corresponding increase in tractive effort for quick acceleration and for the hard pulls. « For the same ton-mile-per-hour capacity a Booster equipped engine has one pair less drivers and a correspondingly lower cost for maintenance. « Half a cent per locomotive mile is the general average for Booster maintenance. Compare this with the cost for power and maintenance that an added pair of drivers would involve, and you will build better instead of bigger locomotives.

Booster repair parts made by the jigs and fixtures that produced the original are your best guarantee of satisfactory performance.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Financial

BALTIMORE & OHIO.—*Notes.*—Kuhn, Loeb & Co., Speyer & Co., and Brown Harriman & Co., New York, are offering $50,000,000 of five-year 4½ per cent secured notes of this company at 100 and, it is announced, more than $36,000,000 of the issue have already been subscribed. The Reconstruction Finance Corporation will purchase at 99 such part of the issue as may not be sold to the public. The financial agents for the railroad are to receive one per cent of the sale price for all the issue sold, and offer half of this percentage to registered security dealers who purchase any of the notes.

INTERNATIONAL GREAT NORTHERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and its trustees to abandon the branch line extending from Calvert Junction, Tex., to Calvert, 5.3 miles.

JAMESTOWN, WESTFIELD & NORTHWESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Jamestown, N. Y., to Westfield, 32.5 miles.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Securities.*—The Interstate Commerce Commission has authorized this company to extend for two years the maturity date of $5,000,000 of its 6 per cent secured notes (the collateral being $6,250,000 of its first refunding mortgage series B bonds). The agreement with the note holders for this extension will not become effective unless holders of 75 per cent assent to the plan, which involves depositing their notes and having additional interest coupons attached to them. As an inducement for such deposit the company is offering a payment of $10 for each $1000 of notes so extended.

PERE MARQUETTE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a line extending from Kirk, Mich., to a point near Kanitz, 8.7 miles.

SOUTHERN PACIFIC. — *Abandonment.* — This company has applied to the Interstate Commerce Commission for authority to abandon its Howton branch, in Tulare county, Calif., 3.12 miles.

SOUTHERN PACIFIC.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire the properties of the New Mexico & Arizona and the Tucson & Nogales. The New Mexico company owns two segments of line—from Fairbank, Ariz., to Flux, 46.6 miles, and another from Calabazas to Nogales, 9.7 miles. The Tucson line extends from Tucson to Calabazas, 55.4 miles. Both companies are controlled by the Southern Pacific by ownership of capital stock.

TUSCARORA VALLEY.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon as to interstate and foreign commerce its entire line, extending from Port Royal, Pa., to Blairs Mill, 27 miles.

WESTERN MARYLAND.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a branch line extending from Emoryville, W. Va., to Elk Garden, 3.4 miles.

Dividends Declared

Louisville & Nashville.—$1.50, payable August 25 to holders of record July 31.

Average Prices of Stocks and of Bonds

	July 24	Last week	Last year
Average price of 20 representative railway stocks..	37.02	40.69	44.49
Average price of 20 representative railway bonds..	76.23	77.70	72.80

Construction

BURLINGON, MUSCATINE & NORTHWESTERN.—The Interstate Commerce Commission has denied the application of this company for authority to construct, rehabilitate and operate a line approximately 50 miles in length, extending from Muscatine, Iowa, to Burlington.

NEW YORK, NEW HAVEN & HARTFORD.—This company will build with company forces a new passing siding, sidetrack and platform to serve a race track at Rumford, R. I.; estimated cost, $65,000. A contract has been awarded to the Tredennick-Billings Company, Boston, Mass., to extend the boiler house and renew the boilers at the Cedar Hill, Conn., engine terminal; probably cost, $105,000.

NORTHERN PACIFIC.—Work has been undertaken on the construction of extensions to five stalls of this company's Mississippi Street enginehouse at St. Paul, Minn. The work is being done by company forces.

OREGON ELECTRIC.—The Interstate Commerce Commission has authorized this company to construct an extension from Forest Grove, Ore., via Seghers, to a mill site of the Stimson Lumber Company, 7.5 miles. The Commission had previously authorized the Southern Pacific to construct an extension to the mill site, withholding approval of the Oregon Electric's application, pending an attempt by the two carriers to agree upon joint use of the facilities to be constructed by the Southern Pacific. Since the companies were not able to reach such agreement, the Commission has proceeded to authorize the Oregon Electric also to construct a line to the mill site.

PENNSYLVANIA.—This road has recently awarded contracts as follows: To Rafferty-Kennedy Company, Philadelphia, Pa., for the construction of a new freight station at Norristown, Pa.; to the Fritz-Rumer-Cooke Company, Columbus, Ohio, for the construction of an undergrade bridge at the proposed crossing of relocated State Highway 38 with the Richmond branch of the P. R. R. Cincinnati division, ½ mile west of Hagerstown, Ind.; to Riggs, Distler & Company, Inc., Philadelphia, Pa., for electrical work for mail handling facilities and miscellaneous services at the Pennsylvania's new Thirtieth Street station in Philadelphia.

PENNSYLVANIA. — This company has undertaken the installation of bulk cement-handling equipment at its river-rail coal handling plant at Conway, Pa., on the Ohio river. The new equipment will consist of an electrically-operated conveyor for transferring bulk cement from railroad cars to river boats. The cement will be dumped from the cars into a small track hopper, from which it will be carried by a belt conveyor a distance of approximately 140 ft. and loaded into the boats. The work also involves the driving of a row of pile clusters along the river bank for mooring boats while they are being loaded with cement.

RECLAMATION BUREAU. — Secretary of the Interior Harold L. Ickes has announced awarding of a contract for the construction of the United States construction railroad at the Grand Coulee damsite in Washington, to David H. Ryan Company of Spokane. The contract price is $235,570. The plans and specifications call for the building of a single-track railroad between Odair, Wash., a sideline about 2 miles northeast of Coulee City, and the Grand Coulee dam site, a distance of about 30 miles; also a delivery yard at Odair, a siding at the head of Grand Coulee, track laying and ballasting of a single track from the head of Grand Coulee to the dam site, and a siding near the dam site. The contractor must complete the construction work in 6 months. An immense amount of machinery, materials and equipment for use on the Grand Coulee dam and power plant construction, will be shipped over this railroad. One of the principal items which will be transported will be 4,000,000 barrels of cement. Until the branch railroad is completed materials and supplies must be trucked in from Almira or Coulee City. The construction railroad will be operated by the contractor for the dam and power plant. The Grand Coulee dam, power plant and construction railroad are being built by the Reclamation Bureau of the Department of Interior, financed by an initial $15,000,000 Public Works Administration allotment.

UNION PACIFIC.—A contract has been awarded to the Omaha Steel Works, Omaha, Neb., for the construction of an electric-driven, conveyor-type, 500-ton coaling station to serve three tracks at Green River, Wyo. This work also includes the construction of two 15-cu. yd. dry sand bins with separate steel towers and a sand storage bin with sand dryers. The approximate cost of this work is $40,000, exclusive of the foundations and pits which will be constructed by railroad forces at an approximate cost of $10,000. A contract has been awarded to the Harnischfeger Sales Corporation, Milwaukee, Wis., for the construction of a separate cinder handling plant, involving the furnishing of an electric bucket-type traveling gantry crane which will operate over two 150-ft. concrete cinder pits. The total approximate cost of the cinder handling plant, including the construction of the cinder pits and the necessary trackwork which will be handled by the railroad company, is $25,000.

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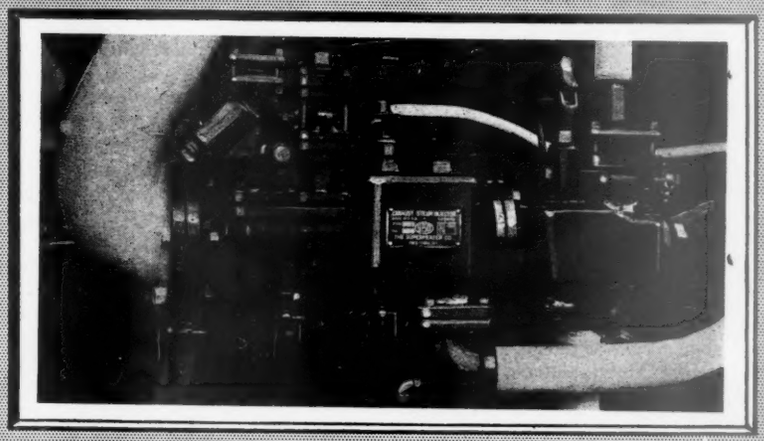
More Hauling Capacity—

Without Additional Fuel



The modern locomotive emphasizes the need for and the efforts made to secure high hauling power at high speeds.

Bear in mind that the Elesco exhaust steam injector will give you a little more capacity in every engine, from eight to ten per cent, because of increased steaming capacity and without any mechanical complication whatever.

The Superheater Company

Representative of AMERICAN THROTTLE COMPANY, Inc.

60 East 42nd Street
NEW YORK

ELESCO

Peoples Gas Building
CHICAGO

A-906

Canada: The Superheater Company, Limited, Montreal

Superheaters - Feed Water Heaters - Exhaust Steam Injectors - Superheated Steam Pyrometers - American Throttles

Railway Officers

EXECUTIVE

The Cowlitz, Chehalis & Cascade, which has been in receivership since March 7, 1932, has been reorganized with the following officers: President, **Arthur A. Murphy,** Seattle, Wash.; vice-president, **H. B. Earling**, Seattle; secretary, **S. J. Henry,** Seattle; treasurer, **D. T. Coffman,** Chehalis, Wash.; and general manager, **M. B. McBride,** Chehalis. During the period of receivership, Mr. McBride served as receiver and general manager.

FINANCIAL, LEGAL AND ACCOUNTING

F. S. Robinson, district freight claim agent for the Chicago, Burlington & Quincy, at Denver, Colo., has been appointed also freight claim agent of the Colorado & Southern, a subsidiary of the Burlington. **C. R. Iliff,** freight claim agent of the C. & S., has retired.

OPERATING

C. B. Anderson, freight claim agent of the Chicago & Eastern Illinois, with headquarters at Chicago, has been appointed also car accountant. **J. T. Cunningham,** car accountant, has been assigned to other duties.

C. J. Foster, assistant superintendent on the Chicago Great Western, with headquarters at Des Moines, Iowa, has been promoted to superintendent of the Illinois-Iowa divisions, with headquarters at Oelwein, Iowa, succeeding **A. A. Freiberger,** who has been transferred to the Minnesota division, with headquarters at St. Paul, Minn. Mr. Freiberger replaces **E. W. Fowler,** who has been elected a member of the National Railroad Adjustment Board. **E. E. Deyo,** night yardmaster at Council Bluffs, Iowa, has been appointed trainmaster, with headquarters at Des Moines, in which position he will take over the duties formerly handled by Mr. Foster.

Southern Operating Department Reorganized

Effective on August 1 the Southern Railway system lines will be grouped into eastern lines, central lines and western lines and the present grouping of lines east and lines west, as heretofore constituted for purpose of operation, as well as the Piedmont, Memphis & Charleston, Queen & Crescent, St. Louis-Louisville, and Alabama districts are abolished. General managers of eastern, central, and western lines will have direction of and give supervision to all departments in their respective divisions. The positions of general superintendent are abolished. Superintendents and other officers heretofore reporting to general superintendents will report to respective general managers. The positions of engineer maintenance of way are abolished. Matters heretofore under their jurisdiction will be handled by respective chief engineers maintenance of way and structures.

W. C. Hudson, general manager, lines east, having been tendered a position as a member of the National Railroad Adjustment Board, has been granted leave of absence to accept that assignment, R. E. Simpson, general manager, lines west, has been appointed assistant vice-president, with office at Washington, D. C. O. B. Keister, general superintendent, with office at Knoxville, Tenn., has been appointed general manager, central lines, with office at Knoxville. L. F. De Ramus, general superintendent at Chattanooga, Tenn., has been appointed general manager, western lines, with office at Cincinnati, Ohio. H. A. DeButts, general superintendent at Danville, Va., has been appointed general manager, eastern lines, with office at Charlotte, N. C. W. M. Cowhig, general superintendent of transportation, lines east, has been appointed to a similar position with the eastern lines, with office at Charlotte, N. C., and R. K. McClain, general superintendent of transportation, lines west, is appointed to a similar position with the central lines, with office at Knoxville, Tenn., while L. M. Triplette, assistant to general superintendent transportation, lines west, has been appointed general superintendent transportation, western lines, with office at Cincinnati, Ohio. G. R. Buddin has been appointed inspector of transportation, eastern lines, with office at Charlotte, N. C., and C. P. King has been appointed inspector of passenger transportation, at Charlotte. L. H. Woodall, general superintendent at Birmingham, Ala., has been appointed assistant general manager, western lines, at Birmingham. B. G. Fallis, general superintendent at St. Louis, has been appointed assistant general manager with headquarters at St. Louis. J. A. Jones, general superintendent of telegraph, has been appointed general superintendent telegraph and telephone, with headquarters at Washington, D. C., and the position of general superintendent of telegraph is abolished. J. R. Smith has been appointed superintendent telegraph and telephone, with office at Charlotte, N. C., and W. S. Melton has been appointed superintendent telegraph and telephone at Cincinnati.

ENGINEERING AND SIGNALING

Albert A. Johnson, track engineer of the Delaware, Lackawanna & Western has been appointed engineer maintenance of way with headquarters as before at Hoboken, N. J., and the position of track engineer has been abolished.

O. R. West, division engineer of the Bay Terminals division of the Atchison, Topeka & Santa Fe, with headquarters at San Francisco, Cal., has had his jurisdiction extended to include the Valley division and his headquarters have been moved to Fresno, Cal., **E. E. Ball,** division engineer of the Valley division at Fresno, having retired. **R. D. Pierson,** assistant division engineer at Fresno, has been transferred to the Bay Terminals division at San Francisco, and the position of assistant division engineer at Fresno has been abolished.

H. E. Tyrell, engineer maintenance of way of the Southern at St. Louis, Mo., has been appointed chief engineer, maintenance of way and structures, central lines, with office at Knoxville, Tenn. **G. L. Sitton,** chief engineer, maintenance of way and structures, lines east, with headquarters at Charlotte, N. C., has been appointed to a similar position with the eastern lines. **A. A. Woods,** chief engineer, maintenance of way and structures, lines west, has been appointed to a similar position with the western lines, with office at Cincinnati, Ohio. **R. D. Tobien** has been appointed assistant to chief engineer, with headquarters at Birmingham, Ala. **G. P. Asbury** has been appointed assistant chief engineer, maintenance of way and structures, eastern lines, and **H. C. Libby** has been appointed engineer bridges, both with headquarters at Charlotte, N. C. **E. Bennett** has been appointed assistant chief engineer, maintenance of way and structures, central lines, and **R. Hayes** has been appointed engineer bridges, eastern lines, with office at Knoxville, Tenn. **O. D. Colaw** has been appointed assistant chief engineer, maintenance of way and structures, and **G. H. Gilbert** has been appointed engineer bridges, western lines, with office at Cincinnati, Ohio.

TRAFFIC

W. C. Ragin, assistant freight traffic manager of the Atlantic Coast Line with headquarters at Wilmington, N. C., has been appointed eastern traffic manager with headquarters at New York.

A. M. Bastress, acting general freight and passenger agent of the Maryland & Pennsylvania with headquarters at Baltimore, Md., has been appointed general freight and passenger agent at the same point. Mr. Bastress was born in September, 1900, at Cranbury, N. J. He entered the service of the Maryland & Pennsylvania in November, 1917, as a clerk in the accounting department and in January, 1922, he was appointed cashier in the agent's office in Baltimore. From November, 1931, to February, 1934, he was special representative in the traffic department. Mr. Bastress became acting general freight and passenger agent in March, 1934, which position he held until his recent appointment as general freight and passenger agent.

D. J. McGanney, whose appointment as general freight agent of the Central district of the Southern Pacific, with headquarters at San Francisco, Cal., was noted in the *Railway Age* of July 21, has been connected with this company for 23 years. He first entered the service of the Southern Pacific as an office boy in the auditor's office in 1911, but soon left this department to become connected with the freight traffic department. Mr. McGanney was advanced successively through the positions of file clerk, rate clerk, head clerk, chief clerk of the manifest bureau, statis-

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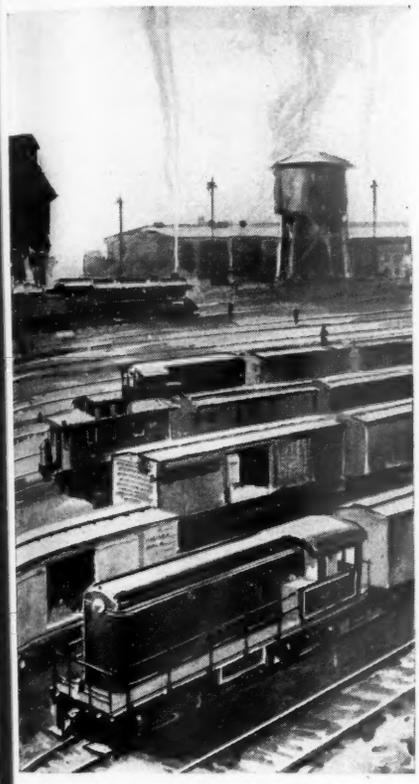
RAILROAD DIESELS FOR RAILROAD MEN



IN recent years railroads in general have been extending terminals —that is, they have been operating both freight and passenger trains over longer distances. No question but what this has been a very economical innovation.

But it has increased tremendously the cost of the switching services that still remain at these former terminals. Such servicing facilities as coal docks, ashpits, water towers, etc., if still retained at these outlying terminals must now be charged entirely to the switching service — or if eliminated, the switchers must be serviced from the new distant terminal. Either case means new increased costs.

Here is a situation made-to-order for the Diesel Switcher which requires none of these expensive facilities for its servicing or maintenance.

This advertisement (No. 8 of a series) presents another of the many factors which, all combined, make the Alco Diesel an outstanding purchase.

AMERICAN LOCOMOTIVE COMPANY

ALCO DIESEL

30 CHURCH STREET · NEW YORK · N·Y·

tician of the freight department and assistant to the freight traffic manager, being appointed to the latter position in 1928. In the following year, Mr. McGanney was further advanced to assistant to the vice-president in charge of freight traffic for

D. J. McGanney

the system, which position he was holding at the time of his recent appointment as general freight agent.

A. I. Hoskins, whose appointment as assistant to the vice-president in charge of freight traffic for the Southern Pacific System, with headquarters at San Francisco, Cal., was noted in the *Railway Age* of July 21, first entered the service of this company in September, 1908, in the office of the assistant auditor of freight accounts. During the following eight years he worked in the station accounts, abstract and revising bureau, following which he served for a few months as reception clerk in the executive office. In November, 1917, Mr. Hoskins was transferred to the freight traffic department, where subse-

A. I. Hoskins

quently he served at various times as head clerk of the local, joint and transcontinental rate bureaus. He also served as personal clerk to the assistant freight traffic manager and in 1923, he became head clerk of the train service bureau of the freight department. In April, 1928, Mr. Hoskins was advanced to assistant general freight agent and in January, 1930, he was made assistant to the freight traffic manager in charge of rates and divisions, which position he was holding at the time of his recent appointment as assistant to the vice-president.

MECHANICAL

H. C. Trexler, master mechanic of the Southern at Spencer, N. C., has been appointed superintendent motive power, eastern lines, with headquarters at Charlotte, N. C. **L. C. Shults,** superintendent of motive power, lines east, with office at Charlotte, N. C., has been appointed to a similar position with the central lines, with office at Knoxville, Tenn. **M. D. Stewart,** superintendent of motive power, lines west, has been appointed to a similar position with the western lines, with office at Cincinnati, Ohio. **M. R. Brockman** has been appointed master mechanic at Spencer, N. C.; **G. F. Tipton** has been appointed master mechanic at Somerset, Ky., and **H. B. Nabors** has been appointed master mechanic at Princeton, Ind. **J. M. Plaskitt** has been appointed master mechanic at Macon, Ga.

A. L. Ralston, who has been appointed general mechanical superintendent of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., as noted in the *Railway Age* of July 14, was born in Brazil, Ind., and was graduated from Purdue University in 1905. He then took a special apprenticeship course with Westinghouse Electric & Manufacturing Company at Pittsburgh, Pa., specializing in railroad work. During 1906 and a part of 1907 he worked in the engineering department of the Westinghouse Company on the development of design and construction of the first electric locomotives built for the New Haven. He was then assigned by Westinghouse to Stamford, Conn., remaining there until 1914, assisting in the work of electrification of the New Haven between New York and New Haven, Conn. Mr. Ralston entered the service of the New Haven in May, 1914, as assistant electrical engineer. In February, 1915, he was made assistant to the mechanical superintendent, in charge of the maintenance of electrical equipment. In May, 1917, he was made engineer of electric traction, with headquarters at Grand Central terminal, New York. In September, 1918, he was promoted to mechanical superintendent in charge of maintenance of electric equipment, retaining that position until his promotion in November, 1932, to the postion of assistant general mechanical superintendent at New Haven, the position he held until his recent promotion.

PURCHASES AND STORES

J. L. Irish, assistant general storekeeper of the Oregon Short Line, the Oregon-Washington Railroad & Navigation Company and the Los Angeles & Salt Lake (all units of the Union Pacific System), with headquarters at Pocatello, Idaho, has been appointed to the same position on the Union Pacific Railroad and the St. Joseph & Grand Island, with headquarters at Omaha, Neb., succeeding **O. Nelson,** who has retired. **A. R. Mullens,** storekeeper at Cheyenne, Wyo., has been appointed assistant general storekeeper at Pocatello, to succeed Mr. Irish.

OBITUARY

Fred C. Baluss, who was engineer of bridges and buildings of the Duluth, Missabe & Northern from 1914 to 1927, died on July 14 at Duluth, Minn., following a long illness. After having served two years as office engineer, Mr. Baluss resigned from the service of this company in 1929. He was a past president of the American Railway Bridge and Building Association.

B. A. Worthington, formerly president of the Alton and of the Cincinnati, Indianapolis & Western (now part of the Baltimore & Ohio), who died on July 18, as noted in the *Railway Age* of July 21, was born on November 20, 1861, at Sacramento, Cal. Mr. Worthington entered railway service on July 1, 1874, as a telegraph messenger on the Central Pacific (now part of the Southern Pacific) at Sacramento, later serving as a telegraph operator. After a short period of service with the Western Union Telegraph Company as a commercial operator, Mr. Worthington entered the employ of the Southern Pacific in 1882 as chief clerk and secretary to the

B. A. Worthington

general master mechanic at Sacramento. During the next 16 years he served in various clerical and secretarial capacities with this company and in 1898, he was placed in charge of the tonnage rating of locomotives. From 1901 to 1903, he served as division superintendent and in the latter year he was advanced to assistant to the general manager at San Francisco, Cal. In 1904, Mr. Worthington was made assistant director of maintenance and operation of the Harriman Lines (the Southern Pacific and the Union Pacific systems) at Chicago. For a short period in 1905, he acted as vice-president and general manager of the Oregon Railroad & Navigation Company (now the Oregon-Washington Railroad & Navigation Company), after which he became first vice-president of the Wheeling & Lake Erie and the Wabash Lines east of Toledo, Ohio. Later he was appointed also general manager of the same lines and in June, 1908, he was made receiver of the Wheeling & Lake Erie. From 1912 to 1914, Mr. Worthington was president and general manager of the Chicago & Alton (now the Alton) and from December, 1915, to his retirement in 1923, he served as president and chairman of the board of the Cincinnati, Indianapolis & Western.